"A RANDOMIZED PROSPECTIVE STUDY ON LIFT(LIGATION OF INTERSPHINCTERIC FISTULA TRACT) AND FISTULECTOMY IN PATIENTS WITH GRADE I AND II ST. JAMES UNIVERSITY CLASSIFICATION FISTULA IN ANO" AT GOVT. KILPAUK MEDICAL COLLEGE HOSPITAL."

Dissertation submitted to

THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI

With partial fulfillment of the regulations for the award of the degree of

M.S (General Surgery)

Branch-I

Government Kilpauk Medical College

Chennai

May -2018

BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled **"A Randomized prospective Study on LIFT (Ligation of intersphincteric fistula tract) and Fistulectomy in patients with grade I and II St. James university classification Fistula in ano**" at Govt. Kilpauk Medical College Hospital is a bonafide work of Dr. VENKATESH. B. K. submitted to The Tamilnadu Dr.M.G.R Medical University in partial fulfillment of requirements for the award of the degree of M.S. BRANCH I (GENERAL SURGERY) examination to be held in MAY, 2018.

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DECLARATION BY THE CANDIDATE

I hereby declare that this dissertation titled **"A Randomized prospective study on LIFT(Ligation of intersphincteric fistula tract) and Fistulectomy in patients with grade I and II St. James university classification Fistula in ano**" at Govt. Kilpauk Medical College Hospital is a bonafide and genuine research work carried out by me in the Department of General Surgery, Government Kilpauk Medical and Hospital, Chennai-10, under the guidance of our Chief **Prof.Dr.M. ALLI DGO.,MS.,** Government Kilpauk Medical College and Hospital.

This dissertation is submitted to **THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI** in partial fulfilment of the University regulations for the award of M.S degree (General Surgery) Branch I, examination to be held in MAY 2018.

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Place: Chennai Dr. B. K. VENKATESH

CERTIFICATE BY THE GUIDE

This is to certify that the dissertation titled **"A Randomized prospective study on LIFT(Ligation of intersphincteric fistula tract) and Fistulectomy in patients with grade I and II St. James university classification Fistula in ano**" in the General Surgery Department at Govt. Kilpauk Medical College Hospital is a bonafide research work done by Dr. B. K. Venkatesh, post graduate in M.S. General Surgery, Government Kilpauk Medical College & Hospital, Chennai-10 under my direct guidance and supervision in my satisfaction and in partial fulfillment of the requirements for the degree of **M.S. General Surgery**.

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This study would have not been possible without the support of my fellow post graduates and interns who have been a great source of help.

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I would like to thank my parents for making me who I am today and for supporting me in every deed of mine.

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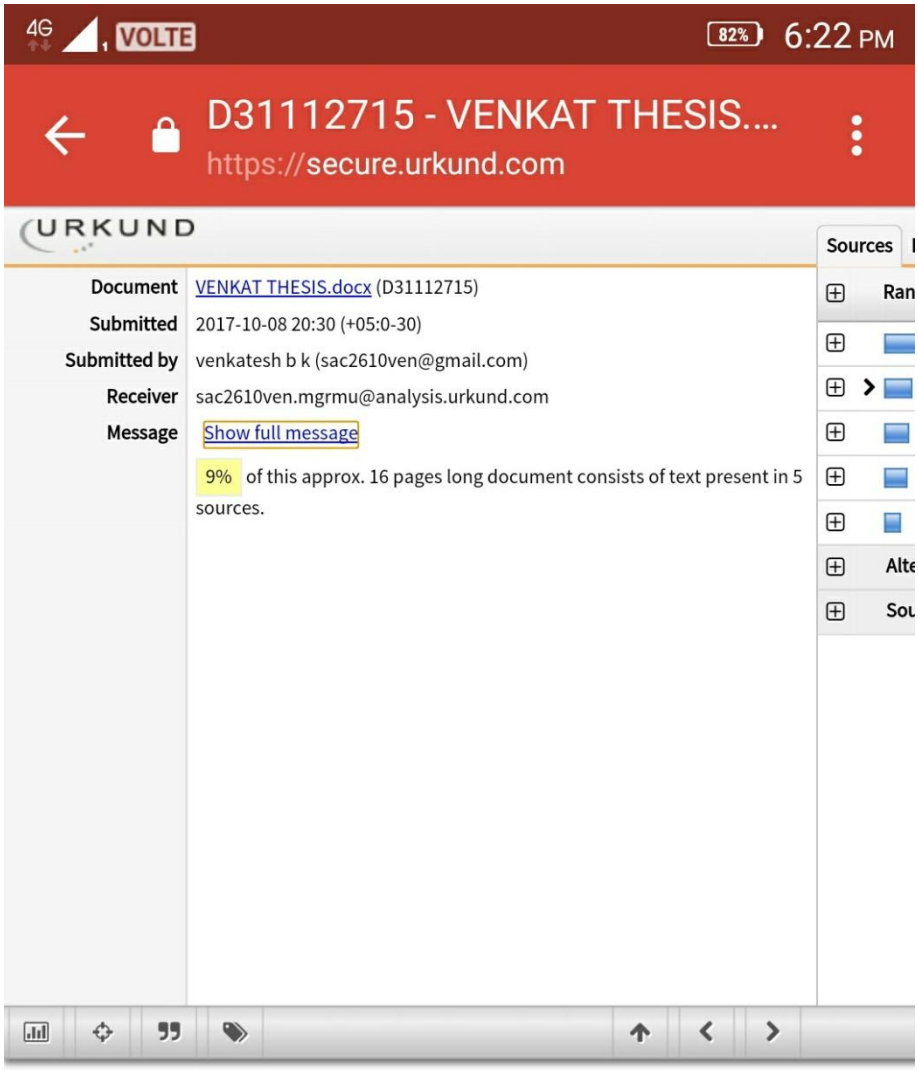

"A Randomized prospective Study on LIFT(Ligation of intersphincteric fistula tract) and Fistulectomy in patients with fistula in ano" At Govt. Kilpauk Medical College Hospital.">

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Chennai May -2018 BONAFIDE CERTIFICATE This is to certify that the

INSTITUTIONAL ETHICS COMMITTEE
GOVT. KILPAUK MEDICAL COLLEGE,
CHENNAI-10

Protocol ID. No.19/2017 Meeting held on 20/01/2017

CERTIFICATE OF APPROVAL

The Institutional Ethical Committee of Govt. Kilpauk Medical College, Chennai reviewed and discussed the application for approval "**A Randomized Prospective Study on LIFT(Ligation of *Intersphincteric* Fistual Tract) and Fistualectomy in patients with grade I and II St.James university classification fistula in ano at Govt.Kilpauk medical college hospital** " submitted by Dr.B.K.Venkatesh, Postgraduate in General Surgery, Govt. Kilpauk Medical College, Chennai.

The Proposal is APPROVED.

The Institutional Ethical Committee expects to be informed about the progress of the study any Adverse Drug Reaction Occurring in the Course of the study any change in the protocol and patient information /informed consent and asks to be provided a copy of the final report.

DEAN 18/1/17
Govt. Kilpauk Medical College,
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14/1/17

TABLE OF CONTENTS

AIMS OF STUDY

This study form compares two approaches to FISTULA IN ANO repairs, LIFT and Fistulectomy, in a tertiary care set up.

In view of the large number of Fistula in ano cases being treated in this hospital it has been considered worthwhile due to cost effectiveness and infrastructure available to us, at the moment. The study compares these two techniques regarding:

a. Duration of surgery

b. Post operative wound healing time

c. Post operative wound infection rate

d. Short term incontinence

HISTORY

HISTORY

- Treatment of Fistula in ano date back to the days of Hippocrates. Today, the Cryptoglandular Basis of Parks classification is the widely accepted one. Treatment of intersphincteric fistula has proved most challenging as it crosses the external sphincter. Though various treatments have been suggested over the years, there is no absolute Gold Standard.
- Hippocrates used horse hair with lint as seton which was periodically tightened.[1]
- Albucascus and John of Ardene tried to rely on patience for treatment but patients often wanted quick treatments.
- Complex fistulas treatment using setons has been described in ‘Treaties of Fistulas’ by Ardene.
- Frederick Salmon successfully treated Charles Dickens in 1835, urging him to open “ The Infirmary for the Relief of the Poor Afflicted with Fistula and other diseases of the Rectum”. It was then renamed as St.Mark’s Hospital for Fistula and other diseases of the rectum.
- Sir Lockhart Mummary remarked that treatment of fistula is usually difficult , more so than complete excision of rectum or gastroenterostomy.[1]

- Recently many treatment options have popped up for Fistula in ano. Anal advancement flaps are argued to be the best even though requirement of greater skill, pain, bleeding and other complications pose counter arguments.
- Fistula plugs areare considered effective based on a trial in UK but their efficacy compared to other methods is not well demonstrated.
- Ligation of intersphincteric fistula tract (LIFT) and its modifications have produced promising results.
- Treatment of Fistula in ano aims at getting rid of the fistula, preserving sphincter function and preventing recurrence. Prognosis is usually affected by complexity and underlying disease that caused the fistula in the first place.

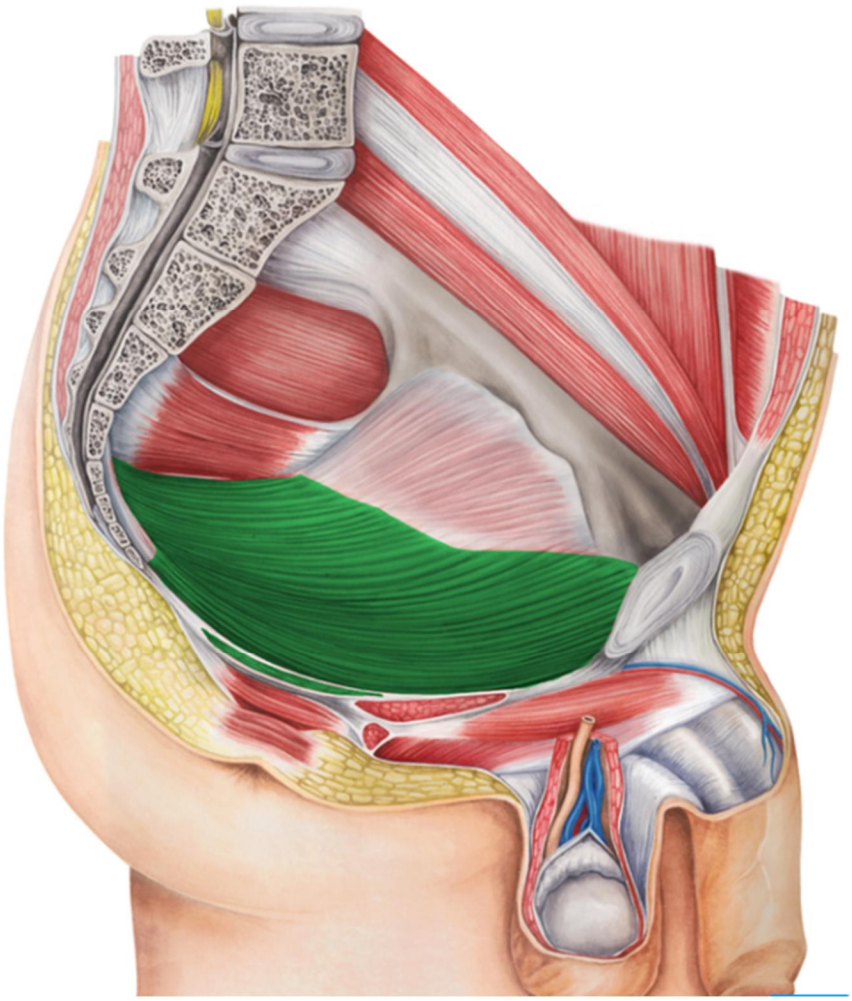
REVIEW OF LITERATURE

ANATOMY

The Pelvic cavity in the body consists of an inlet and outlet in which the outlet is formed by Levator Ani and the Coccygeous. The Perineal region is a diamond shaped area medial to the thighs appreciated well in the lithotomy position.

Anterior apex is formed by the inferior aspect of arcuate ligament and pubic segments while the posterior apex is formed by the coccyx.[2]

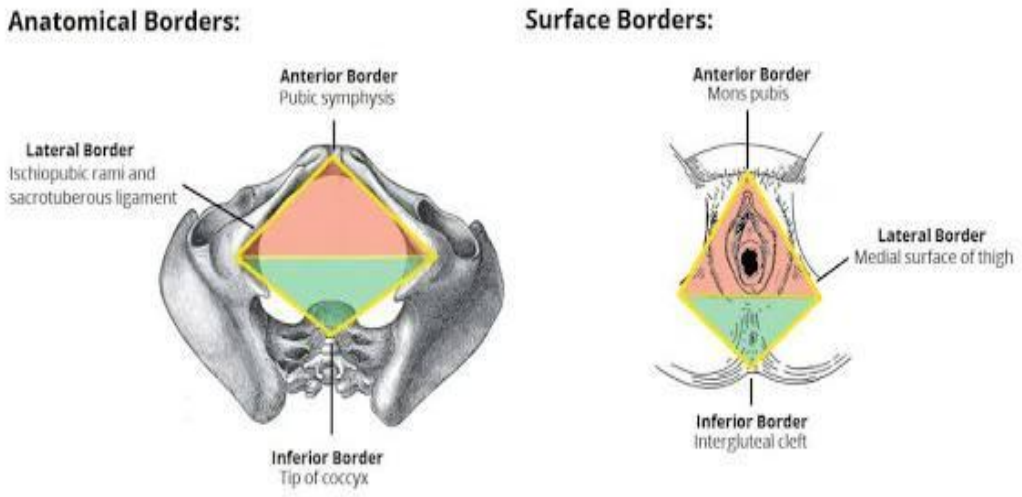
Anterolaterally this extends till Ischiopubic ramus and posterolaterally extends till the Sacrotuberous ligaments. Ischial tuberosity divides the region into the urogenital and Anal triangle.



BOUNDARIES OF PERINEAL REGION

Anal triangle includes the anal orifice with the respective external genitalia. The midpoint of Interischial line , posterior to the posterior commissure of Vagina is the surface marking of Perineal body.

Gynecological perineum which facilitates excretion , ejection and reproduction is marked at the midpoint of Interischial line and the Anus. It consists of many blood vessels , lymphatics and nerves. The rich innervation of Perineum makes it highly sensitive.



UROGENITAL TRIANGLE

Anterior portion of the perineal region bound by the Interischial line called the Urogenital triangle is almost similar in males and females exhibiting a few differences in its contents.

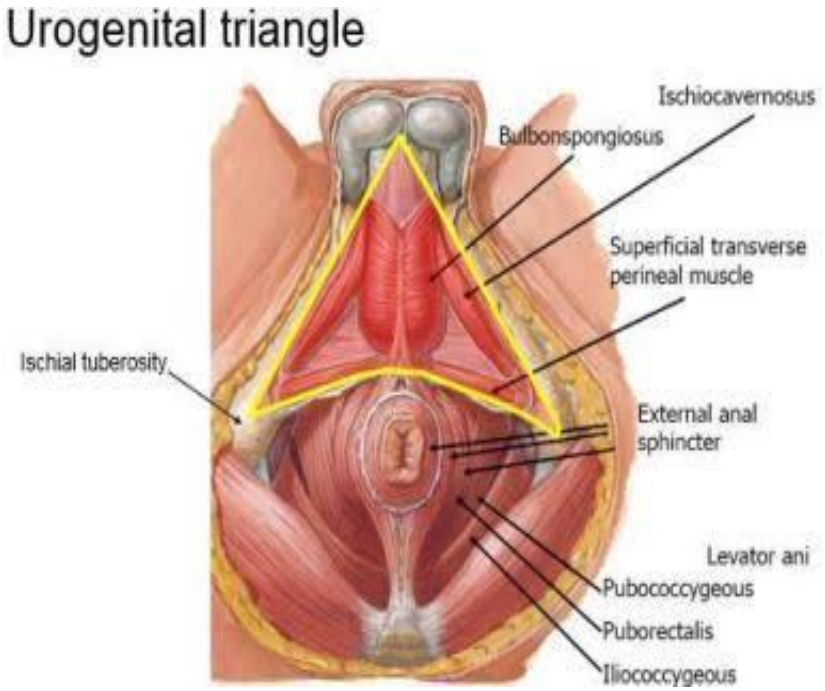
The perineal membrane also called the inferior fascia of the Urogenital diaphragm , is a sheet of fibrous tissue which divides the Perineal space into Superficial and Deep Perineal space.

Transverse perineal ligament is where the membrane is attached to the Arcuate ligament of the Pubic Symphysis in males and Pubourethral ligament in females.

The Deep Perineal pouch consists of

- Superficial Transverse muscles
- Pudendal neuromusculature
- Corpus Spongiosum
- Corpora Cavernosa

The Perineal body is a fibromuscular mass with many muscular attachments and forms an important structure in the Perineal region. It is related anteriorly to Bulbospongiosum, posteriorly to External Anal sphincter and superiorly to Rectoprostatic septum of the pelvis.[3]



MUSCLES OF UROGENITAL TRIANGLE

The muscles used for reproductive process and urinary excretion are

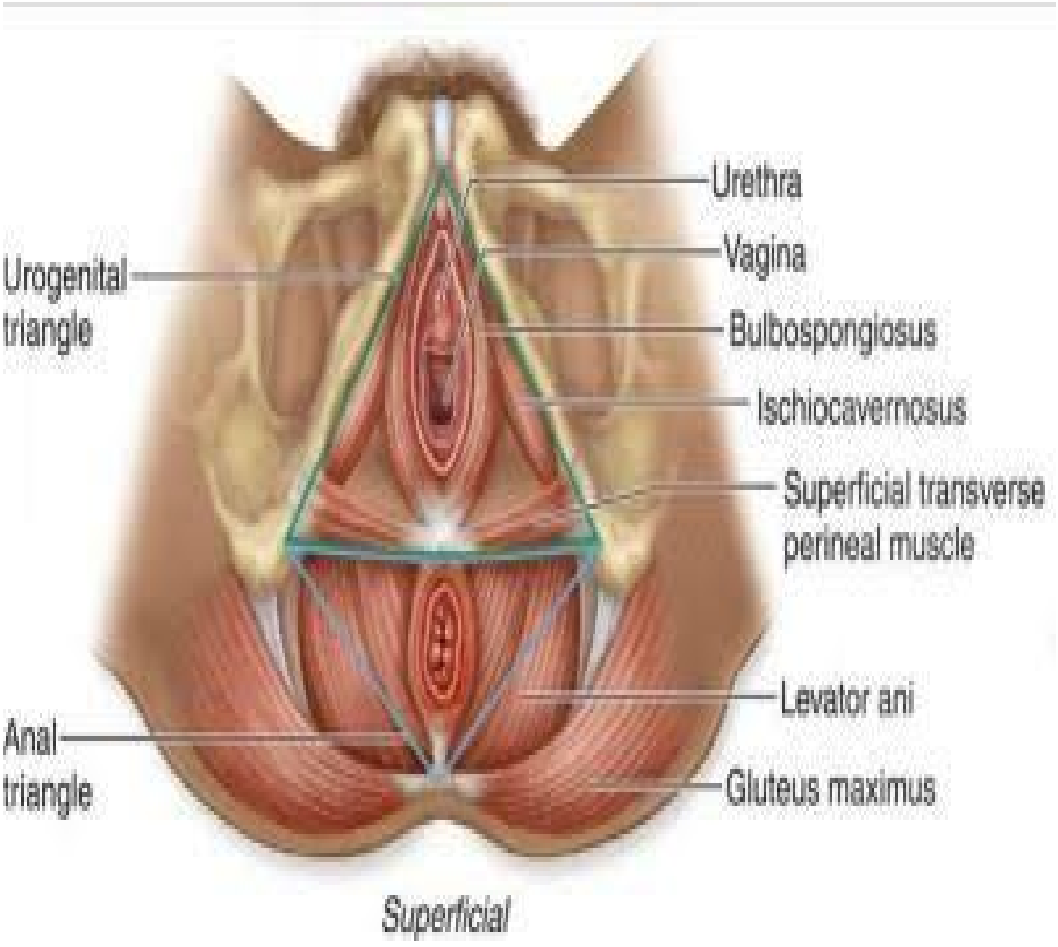
- Superficial Transverse Perinei
- Deep Transverse Perinea
- Bulbospongiosus
- Ischiocavernosus

1. Superficial Transverse Perinea which are attached to the Ischial Tuberosity and Perineal Body posterior to the Anus.

2. Deep Transverse Perinei which are anteriorly deficient and attached to the Perineal Body and Ischiopubic Ramus

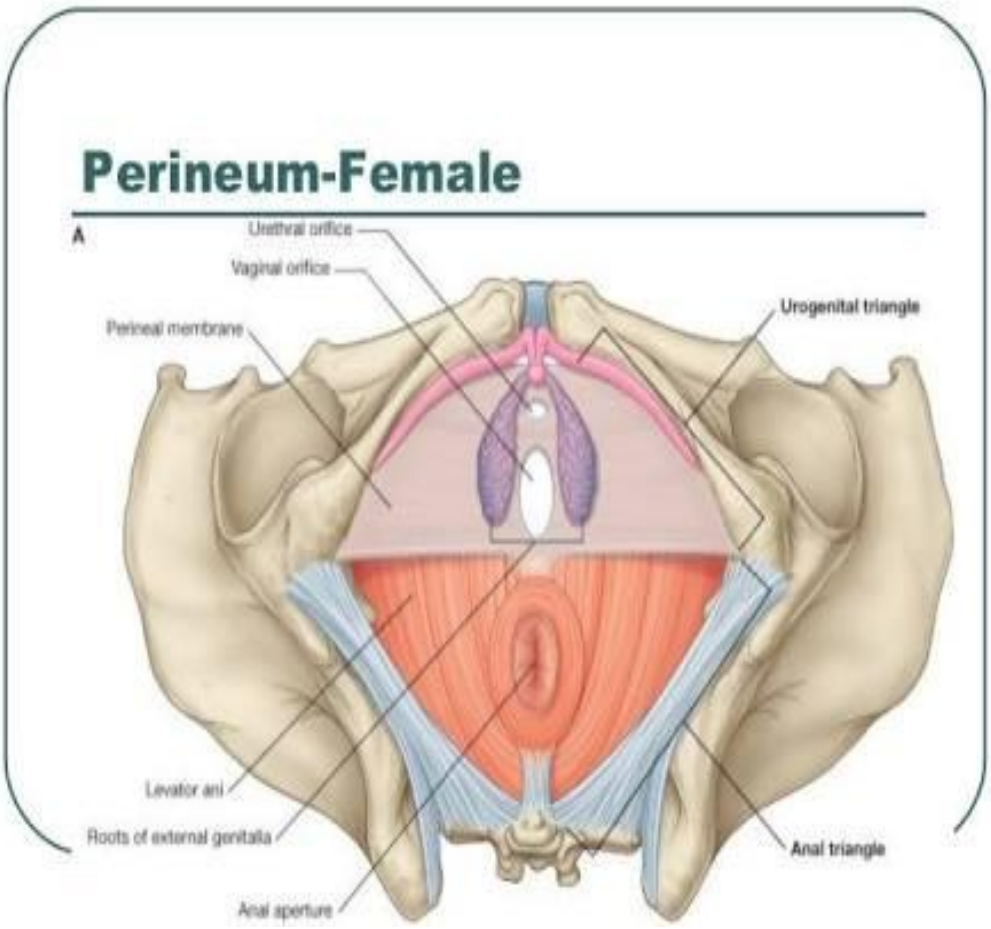
3. Bulbospongiosus in females inserts in the Corpora Cavernosa of Clitoris. While in males they are attached to the Transverse Superficial Perinei muscles. They assist mainly in voiding during micturition and expulsion of semen and vaginal secretions.

4. Ischiocavernosus present in males assists in stabilising the erect penis and is larger compared to the one in females which assists in erection of clitoris.



FEMALE UROGENITAL TRIANGLE

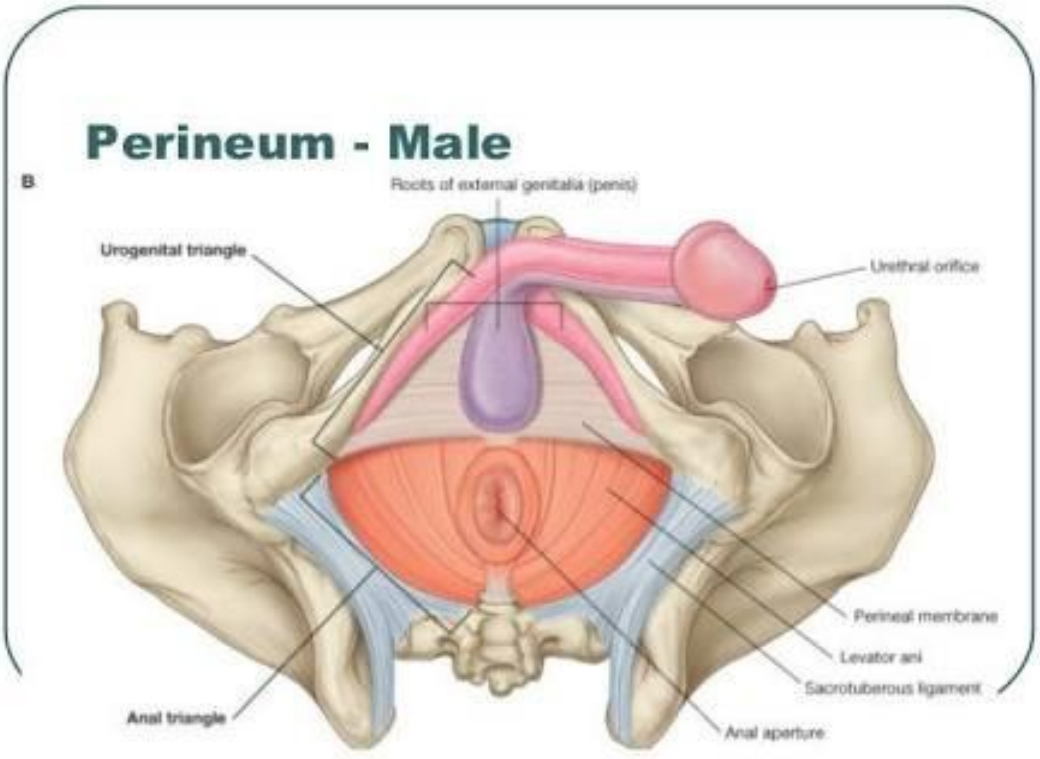
It consists of Mons Pubis , Labia Majora , Labia Minora , Clitoris , Vaginal and Urethral orifices. The muscles which are involved are Urethrovaginalis which as suggested by the name surround the Urethral and Vaginal orifices. Urethra and diaphragm divide the Urogenital diaphragm into two triangular halves which is held intact with the help of Pubourethral ligaments.



MALE UROGENITAL TRIANGLE

It consists of the Bulb of Penis and Scrotum which assist in the attachment of penis.

The nerves, vessels, Bulbourethral ducts, Urethra all pass over the Perineal membrane. The Perineal Raphe is continuous with the Perineal body.



ANORECTAL TRIANGLE

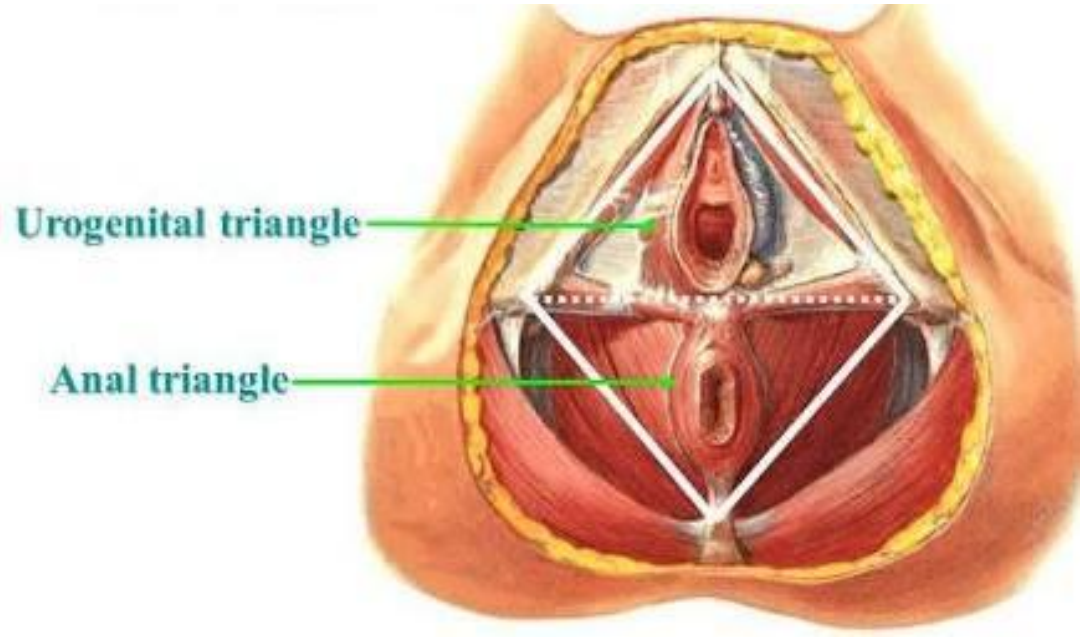
The posterior part of the Perineal region is called the anorectal region which is considerably wider in females allowing the passage of baby through the pelvic cavity to be more convenient. The Urogenital triangle forms the anterior part with the Coccyx forming the apex. [3]

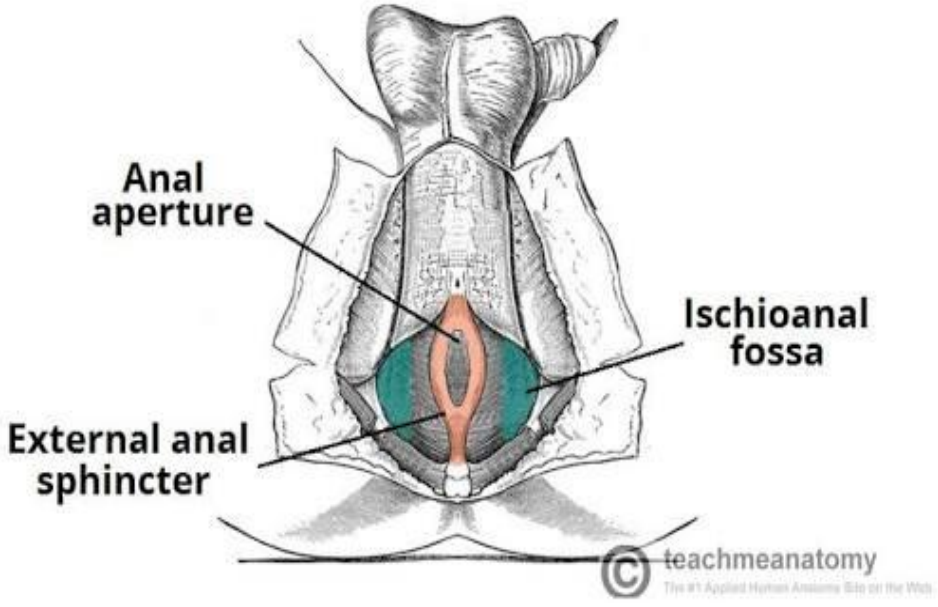
Not only the wider transverse diameter but also the anteroposterior distance between the Pubic Arch and Coccyx determines the passage of baby through the cavity.

The Ischioanal fossa with horse shoe shaped appearance present on either side of the Anal canal is limited medially by the sloping Levator Ani muscles and the External Anal sphincter and laterally by the Obturator Internus mucle and its fascia.

The deep fascia of Anal triangle covers the deep region of Ischiorectal fossa while the Superficial fascia is the continuation of fascia of Peritoneal skin, buttocks and thigh.

The external anal sphincter on voluntary contraction restricts defecation and flatus.


Urogenital triangle
Anal triangle

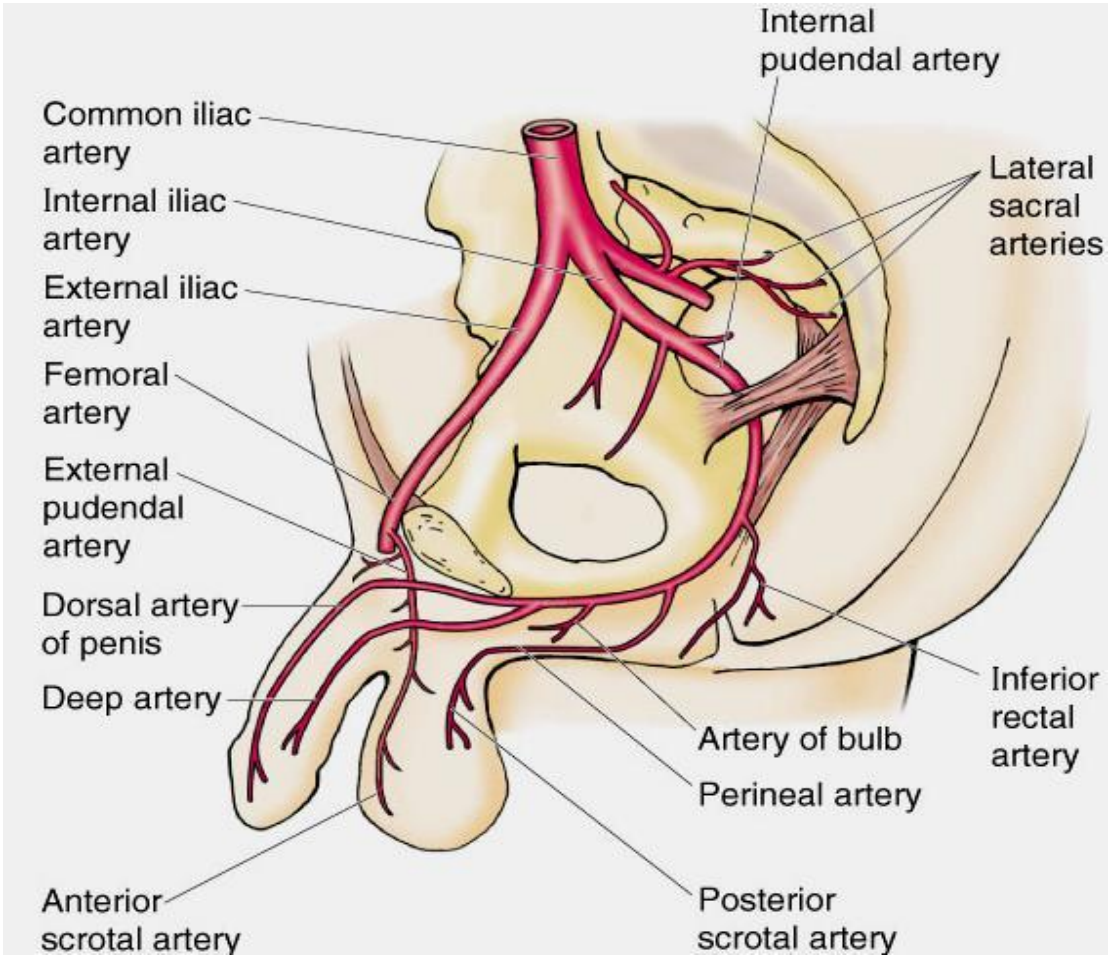

Anal aperture
Ischioanal fossa
External anal sphincter
© teachmeanatomy

BLOOD SUPPLY

The chief supplying artery is the Internal Pudendal Artery which gives cavernosal and dorsal arteries to the Penis and Vestibule, vaginal branches in females, are branches of Internal Iliac Artery.

The branches of Internal Pudental Artery are the Inferior Rectal Artery supplying the External Anal sphincter and the Perineal arteries anastomosing with Posterior Scrotal and Inferior Rectal arteries.

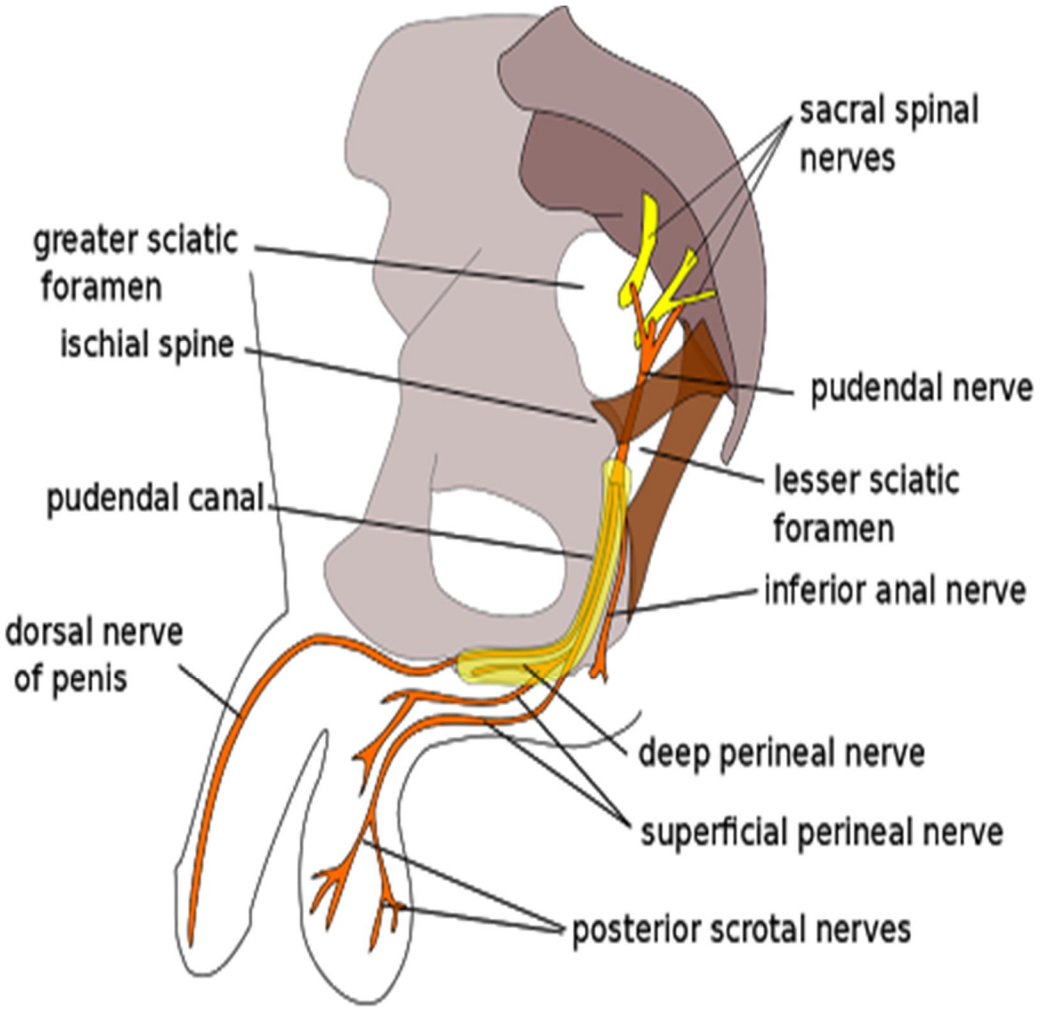
Their main region of supply includes Scrotum, Labia, Perineal body and Transverse Perinei muscles.[2,3]


Internal pudendal artery
Common iliac artery
Internal iliac artery
External iliac artery
Femoral artery
External pudendal artery
Dorsal artery of penis
Deep artery
Lateral sacral arteries
Inferior rectal artery
Artery of bulb
Perineal artery
Anterior scrotal artery
Posterior scrotal artery

INNERVATION

The major source of innervation is the Pudendal nerves which includes the Inferior Rectal Nerve, Dorsal Nerve of Clitoris/Penis and the Perineal Nerve being the largest supplying the Transverse Perinei, Ischiocavernosus and Bulbospongiosus.

The External Anal sphincter and the skin surrounding the Anus is innervated by Inferior Rectal Nerve while Corpus Cavernosa is innervated by Dorsal Nerve of Clitoris / Penis.[2,3]


sacral spinal nerves
greater sciatic foramen
ischial spine
pudendal nerve
lesser sciatic foramen
pudendal canal
inferior anal nerve
dorsal nerve of penis
deep perineal nerve
superficial perineal nerve
posterior scrotal nerves

FISTULA IN ANO

BACKGROUND

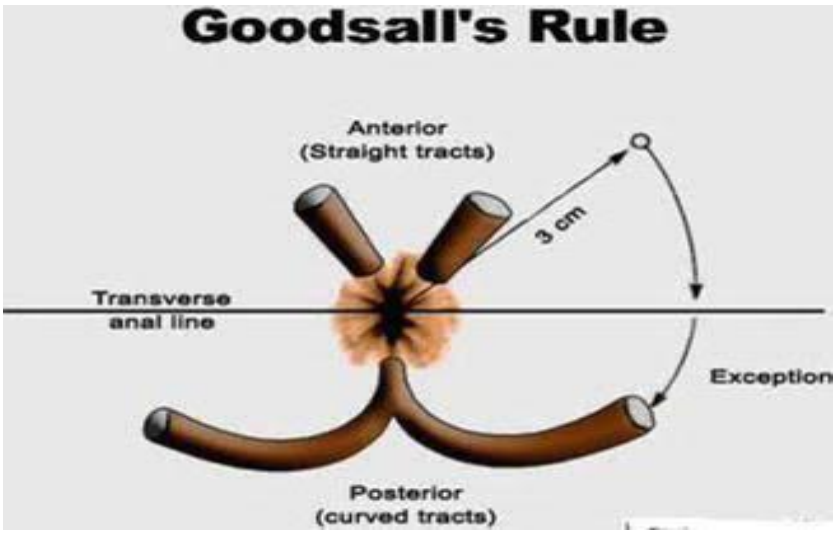
Perianal fistula is an abnormal tract or cavity that connects a primary opening inside the anal canal to a secondary opening in the Perianal skin. These fistulas are often confused with Hidradenitis Suppurativa, infected Inclusion cysts, Pilonidal sinus or Bartholin gland abscesses in females.

They often arise due to infection resulting in abscess. Symptoms range from minor discomfort to pus discharge with hygiene problems to sepsis.

References to Fistula in ano date back from the time of Hippocrates. Late nineteenth and early twentieth centuries saw the works of prominent surgeons and physicians in this condition. Treatment remains challenging, surgery being the treatment of choice[4,5,6].

GOODSALL'S RULE

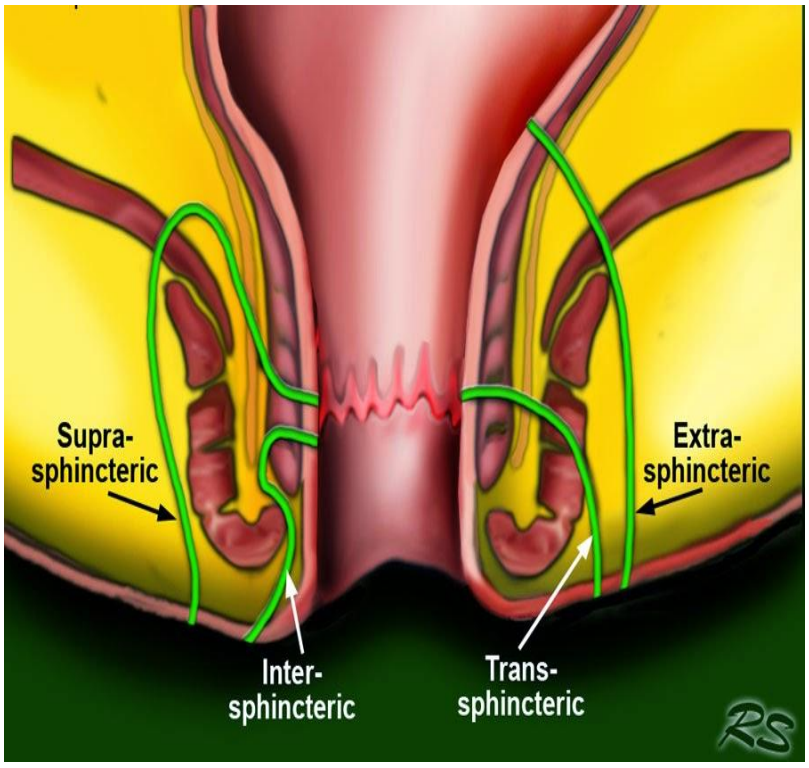
The Goodsall rule helps to anticipate the anatomy. It states that fistulas with external opening anterior to a plane passing transversely through the center of the anus will follow a straight radial course to the Dentate line and the fistulas with their openings posterior to this line will follow a curved course. Exceptions to this rule are external openings lying more than 3 cm from the anal verge.[7,8]



CLASSIFICATION

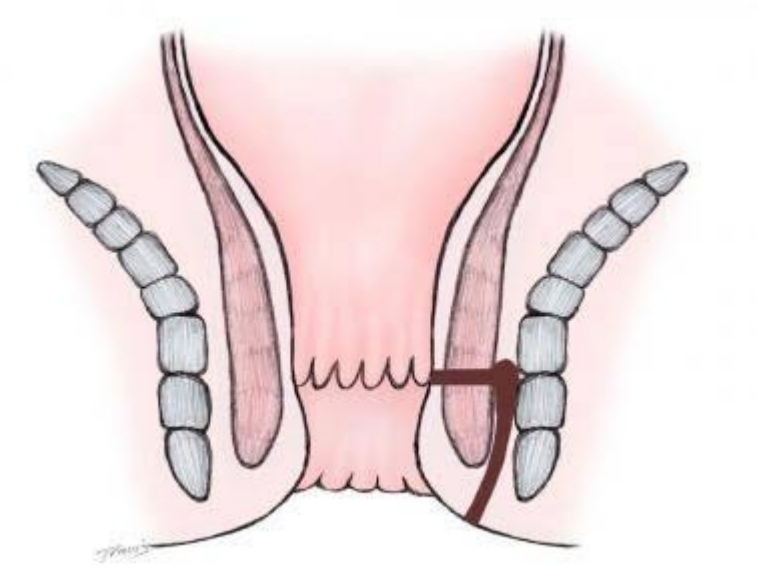
One of the most commonly used systems is the Parks classification system. According to this classification, Perianal fistulas are classified into four types[9]

- Intersphincteric
- Transsphincteric
- Suprasphincteric
- Extrasphincteric



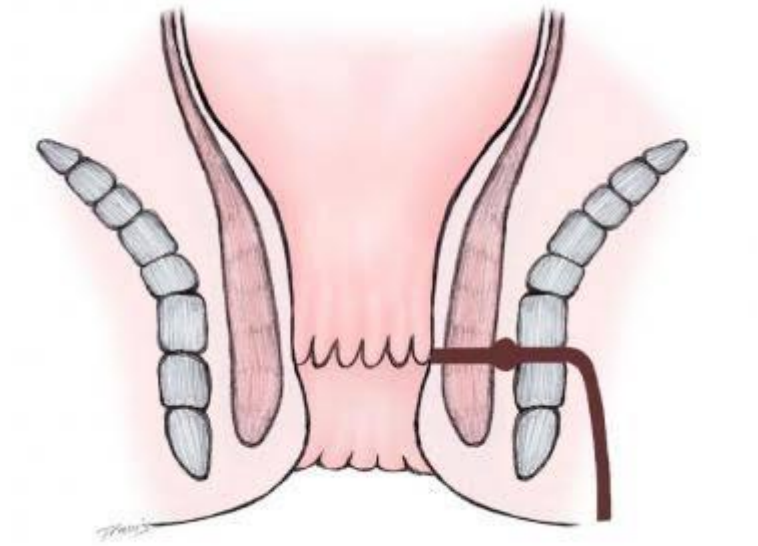
INTERSPHINCTRIC FISTULA

- Comprises of 70% fistulas
- Due to Perianal abscess
- Begins at Dentate line, tracks through the internal sphincter to the space between the two anal sphincters and terminates in the Perianal skin.



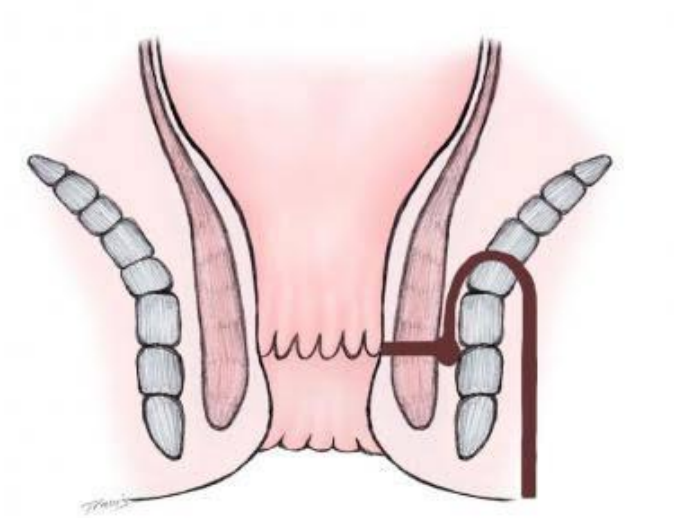
TRANS-SPHINCTERIC FISTULA

- Comprises of 25% fistulas
- Due to Ischiorectal fossa abscess
- Tracks from Dentate line into the Ischiorectal fossa to the Perianal skin.



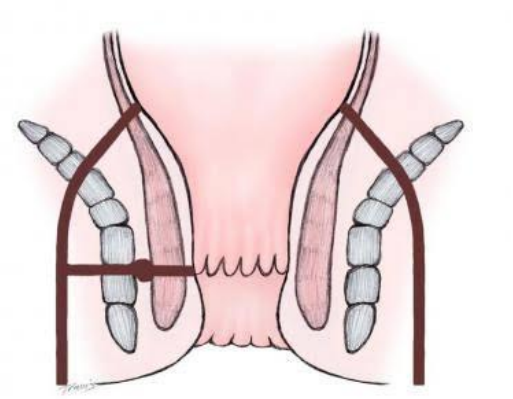
SUPRASPHINCTERIC FISTULA

- Comprises of 5%
- Due to Supraelevator abscess
- Passes from the Dentate line to the Intersphincteric space superior to the Puborectalis, then curves downwards laterally to the External Anal sphincter into the fossa and finally into the skin.



EXTRASPHINCTERIC FISTULA

- Only 1%
- Due to foreign body penetration, penetrating injury, Crohns disease, carcinoma, Pelvic Inflammatory Disease.
- Runs from the skin through the Ischiorectal fossa, tracks upwards and through Levator Ani to the Rectal wall completely outside the sphincter.



Procedural terminology gives the following types in classification of Perianal fistulas.

- Subcutaneous
- Submuscular
- Complex, recurrent
- Second stage

ETIOLOGY

- It is usually caused by a previous Anorectal abscess.
- The Anal crypt glands arranged circumferentially at the level of
- Dentate line provide a path for infecting organisms. After treatment a tract lined by granulation tissue is left behind.
- 7-40% of cases occur after an Anorectal abscess[10,11].
- Trauma, Crohn's disease, Anal fissure, carcinoma, radiation, TB and other causes may also predispose to Fistula in ano.
- Incidence of fistula from anal abscess ranges from 26%-38%.[12].

- Mean patient age is 38.3 years.[13]

CLINICAL PRESENTATION

- History of previous pain
- History of swelling and drainage of abscess
- Bleeding
- Diarrhea
- Skin excoriation
- External opening
- In a complex fistula, the patient may have history of Inflammatory Bowel Disease, Diverticulits, previous radiation, TB, steroid therapy or HIV infection.

PHYSICAL EXAMINATION

The entire perineum must be observed for an external opening that may appear as an open sinus or elevation of granulation tissue.

Digital rectal examination (DRE) may reveal fibrous tract or cord beneath the skin. Spontaneous discharge of blood or pus may be expressible.

The relationship between the Anorectal ring and the position of the tract must be determined before the administration of anaesthesia.

Internal opening is usually imaged by Anoscopy. Proctoscopy in case of Rectal diseases is indicated. Most patients cannot tolerate even gentle probing of the tract.

WORK UP

LABORATORY STUDIES

Physical examination remains the mainstay though normal preoperative laboratory studies are to be performed.

IMAGING STUDIES

Routine evaluation does not make use of radiologic studies. However, such studies are useful to identify secondary tracts in recurrent disease.[14]

Fistulography

Radiographic images are used to outline the fistula tract following the injection of contrast via the internal opening.

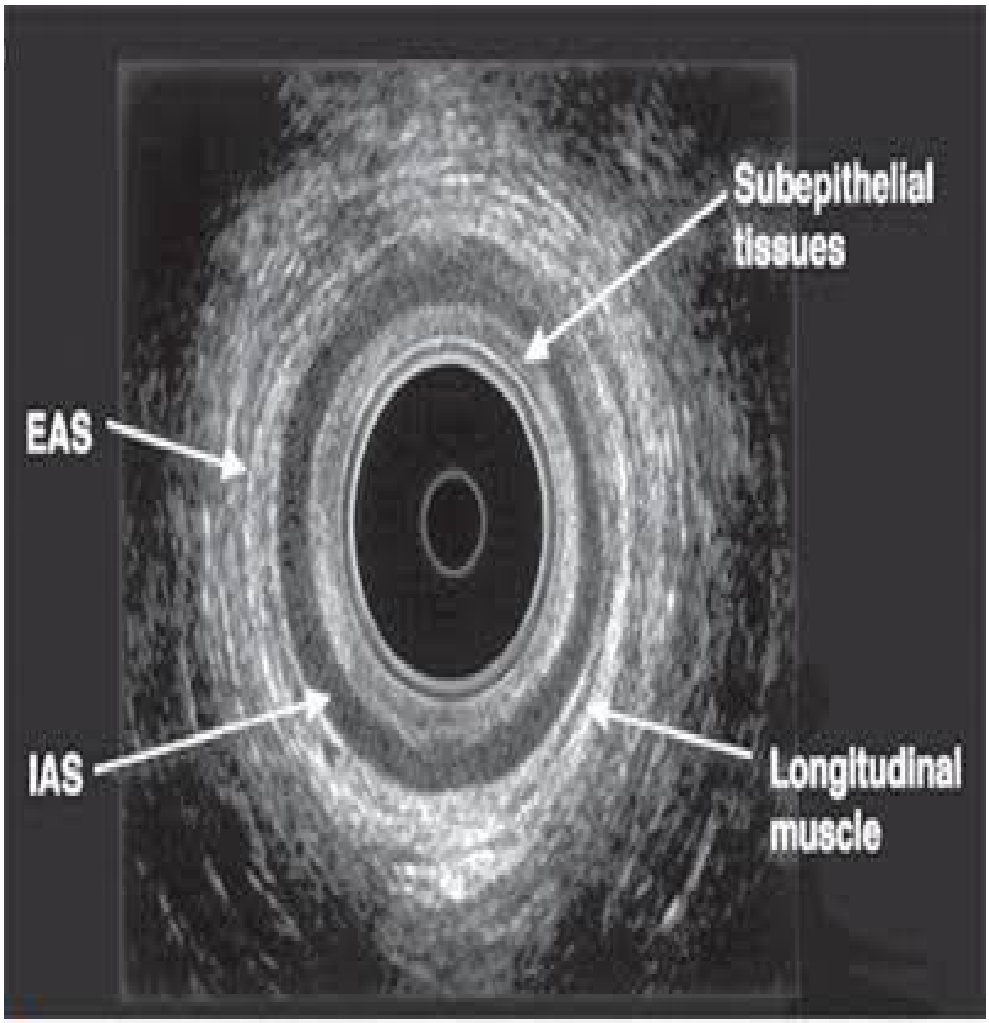
It can be painful and requires the ability to visualize the internal opening. It is 16-48% accurate.[15]


RT
[1]

Endoanal/endorectal ultrasonography

A 7 MHz or 10 MHz ultrasound transducer is passed into the Anal canal to differentiate between Intersphincteric and Transsphincteric lesions. Suprasphincteric lesions are defined using water filled balloon transducer.

Missed internal openings and those outlining the fistula tract can be aided by adding hydrogen peroxide through the external opening. It is better than physical examination in detecting the internal opening.[16]



A

Magnetic resonance imaging

They show the concordance with operative findings. They are the study of choice for complex and recurrent fistulas. It provides information on otherwise unknown secondary extensions, thus reducing recurrence rates.[17,18]

There is special classification for Perianal fistulas based on MRI imaging. It is **St. James university hospital classification**. It includes five grades.

GRADE 1

Simple linear Intersphincteric fistula.

GRADE 2

Intersphincteric fistula associated with abscess or secondary tracts.

GRADE 3

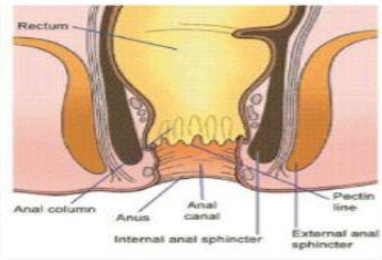
Transsphincteric fistula.

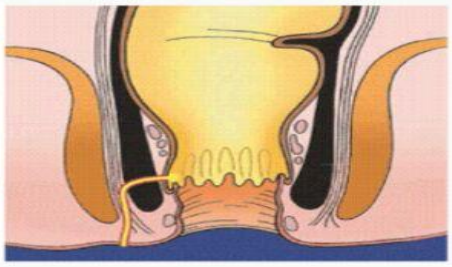
GRADE 4

Transsphincteric fistula associated with abscess or secondary tracts.

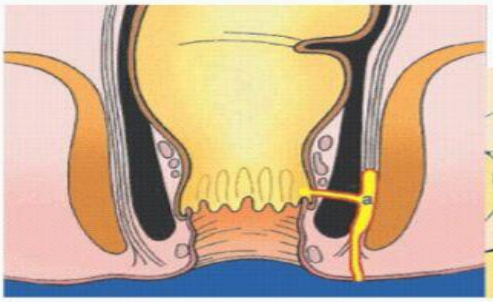
GRADE 5

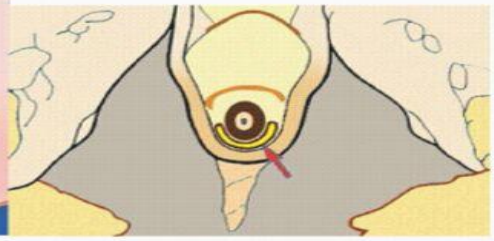
Supraelevator and Transelevator extension



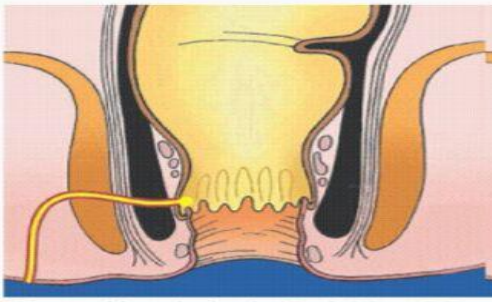


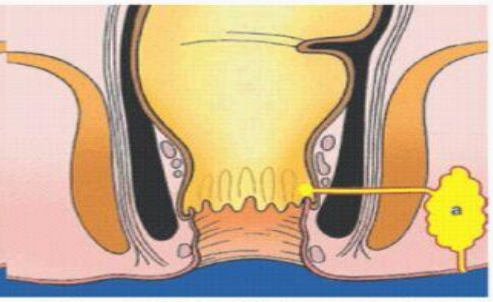
A-Normal anatomy B-Intersphincteric (Grade I)



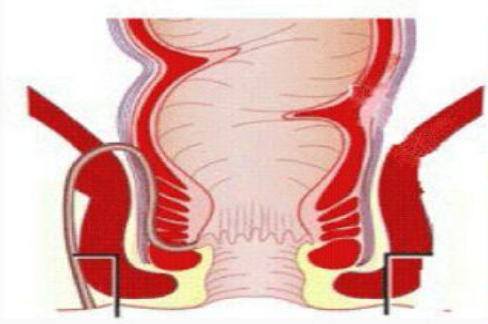


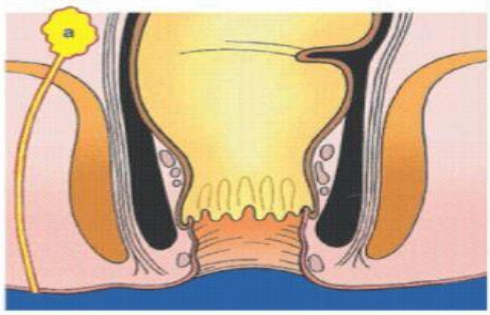
C-Intersphincteric with abscess formation (Grade II) D-Intersphincteric horseshoe (Grade II)





E-Trans-sphincteric fistula (Grade III) F-Trans-Sphincteric fistula with abscess (Grade IV)





G-Supra-sphincteric fistula (Grade V) H-Extra-sphincteric (Grade V)

Computed tomography

It is indicated in case of Perirectal Inflammatory Disease to delineate fluid pockets. Oral and rectal contrasts are administered.

Barium enema/small bowel series

Patients with complex multiple fistulas and recurrent disease benefit by this method.

Anal manometry

It is rarely used to evaluate Fistula in ano. However it is used for operative planning.

Surgical division of sphincter mechanism is avoided if a decrease in pressure is found.

PROCEDURES

EXAMINATION UNDER ANAESTHESIA

It is done before surgical intervention if outpatient evaluation is not comfortable or not sufficient.

They help to locate the course and identify the internal opening.

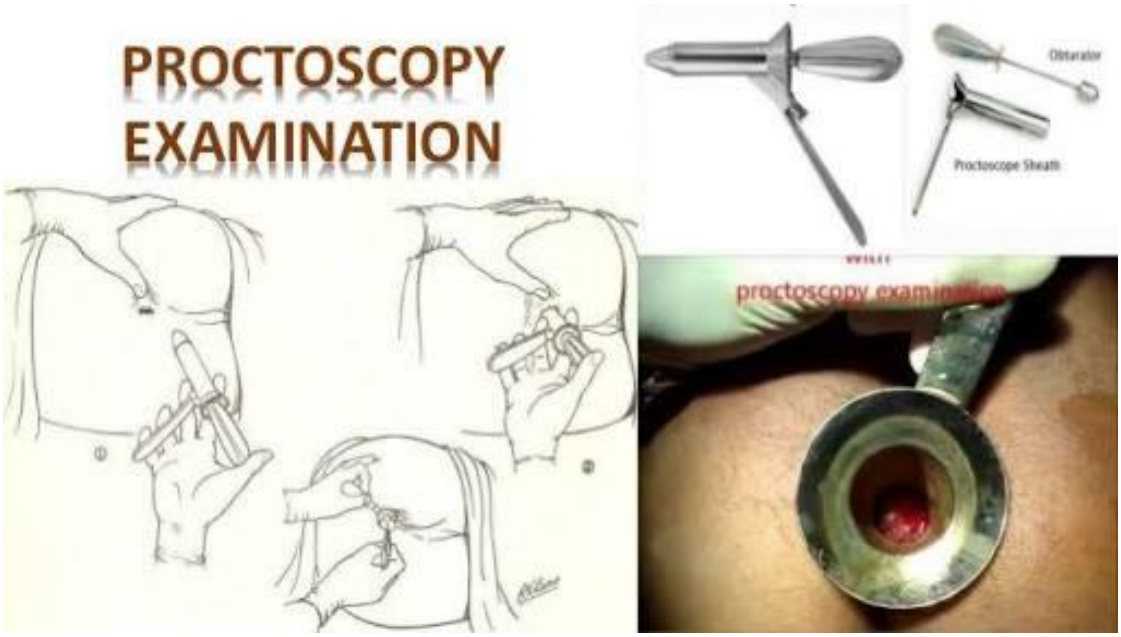
1. Hydrogen peroxide, milk or dilute Methylene Blue is injected into the external opening and egress at the Dentate line is observed.

2. Dimpling or protrusion of the involved crypt may be caused by traction of external opening.

3. A blunt tip crypt probe is inserted though the external opening to reveal the direction of the tract.

PROCTOSIGMOIDOSCOPY/ COLONOSCOPY

It is done to rule out any associated disease in the rectum.



TREATMENT AND MANAGEMENT

APPROACH CONSIDERATIONS

Symptoms of recurrent Anorectal sepsis lead to therapeutic interventions. Acute cases require incision and drainage. In case of Crohn's disease, definitive repair requires the intra abdominal disease to be controlled. Pan proctocolectomy is indicated for recurrent fistulous disease with persistent sepsis.

Infliximab is responsive in 50-60% of Crohn's disease cases. Non symptomatic fistulas found on regular examination require no therapy.[19,20]

Preoperative considerations are

1. Rectal irrigation with enema.
2. General/ local anaesthesia or regional block
3. Preoperative antibiotics.
4. **Prone jack knife position** with buttocks apart.[21,22]

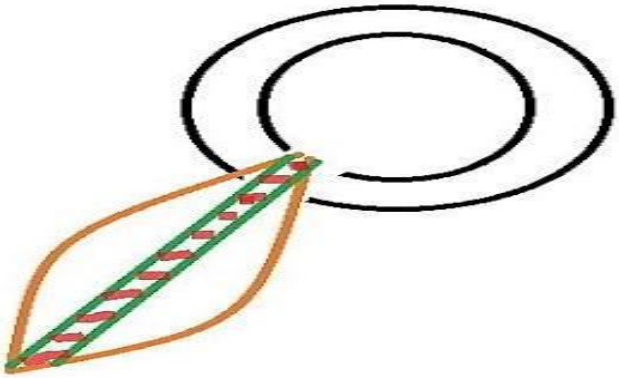
Intraoperative considerations are

1. Examination of the extent under anaesthesia.
2. Identifying the internal opening.
3. Local anaesthetic block at the end for post operative analgesia.

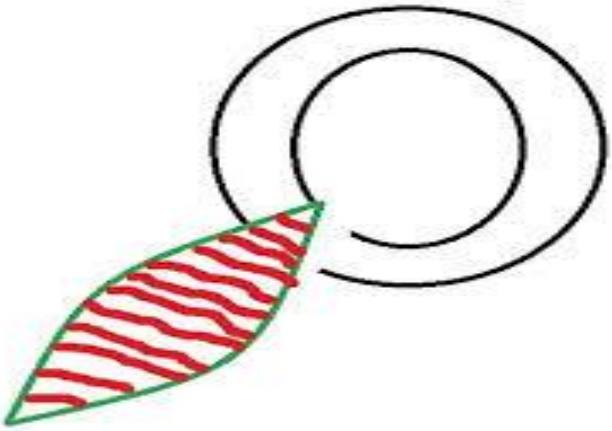
FISTULOTOMY

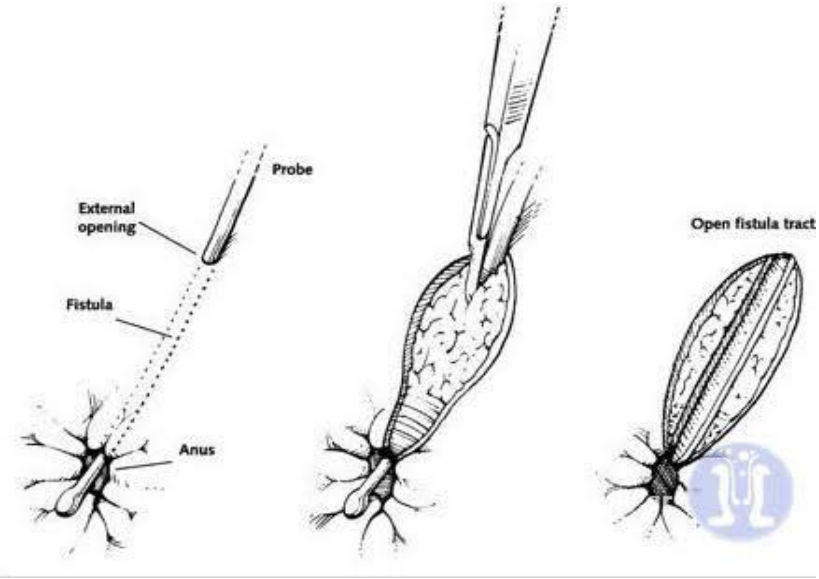
- 85-95% of the primary fistulas benefit by the laying open technique called Fistulotomy.[23,24,25,26,27]
- A probe is passed into the tract and the over lying tissues are divided, thereby opening the entire fibrous tract.
- At low levels, the internal and subcutaneous external sphincter are divided at right angles.
- Continence remains unaffected.
- Seton placement is done if the tract courses higher into the sphincter.
- Tract base granulation tissue should be completely removed by curettage.
- Internal healing before external closure is promoted by opening the wound out on the skin 1-2 cm adjacent to the external opening.
- Complete Fistulectomy creates larger wounds and offer no recurrence advantage.

Fistulotomy



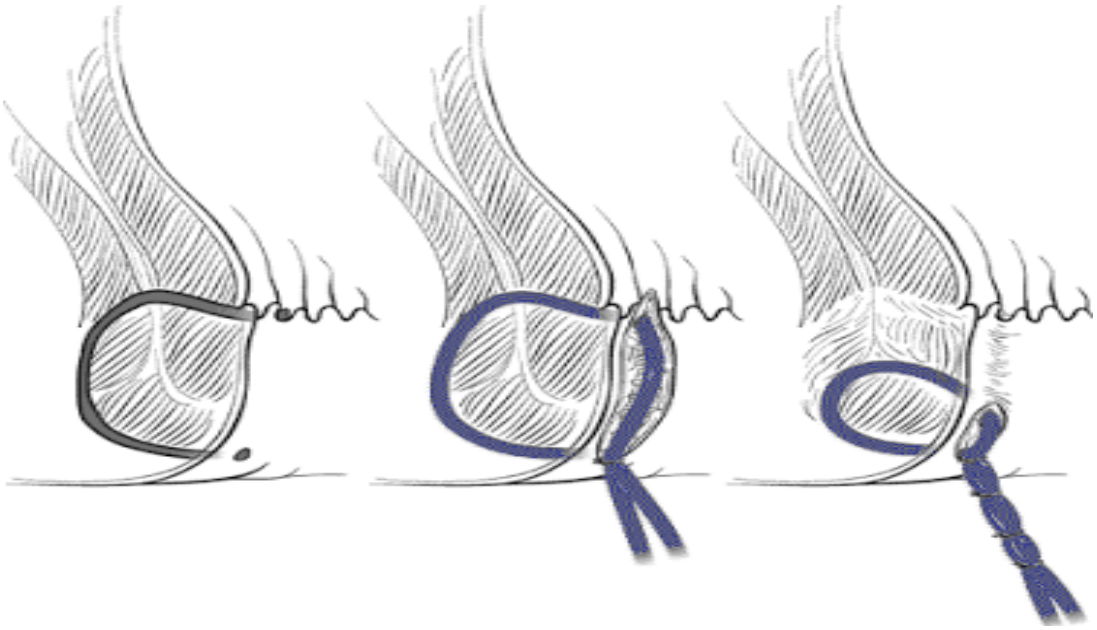
Fistulectomy

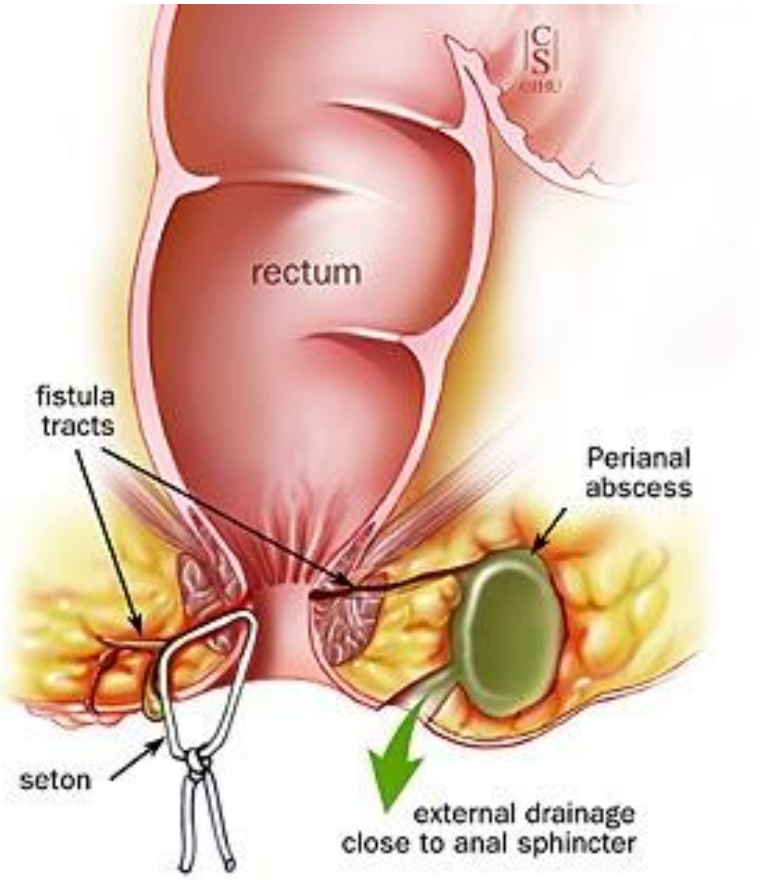




SETON PLACEMENT

- They are large silk sutures, silastic vessel markers or rubber bands that are threaded through the tract.
- They help to drain, to promote fibrosis and to cut through the fistula.
- They are useful in patients with complex, recurrent, anterior fistulas, poor preoperative sphincter pressures or in Crohn's disease.[28,29,30]




rectum
fistula tracts
Perianal abscess
seton
external drainage close to anal sphincter

SINGLE STAGE SETON

- The seton is passed through the tract around the Deep External sphincter after opening the skin, subcutaneous tissue, Internal sphincter and subcutaneous External sphincter. It is then tightened and tied with a separate silk tie.
- Fibrosis occurs above the seton and exteriorizes the tract. It is tightened on subsequent visits and pulled through over 6-8 weeks.
- Recurrence of incontinence should be considered.
- However success rates are 82-100%.[31,32,33]

TWO STAGE SETON (DRAINING/FIBROSING)

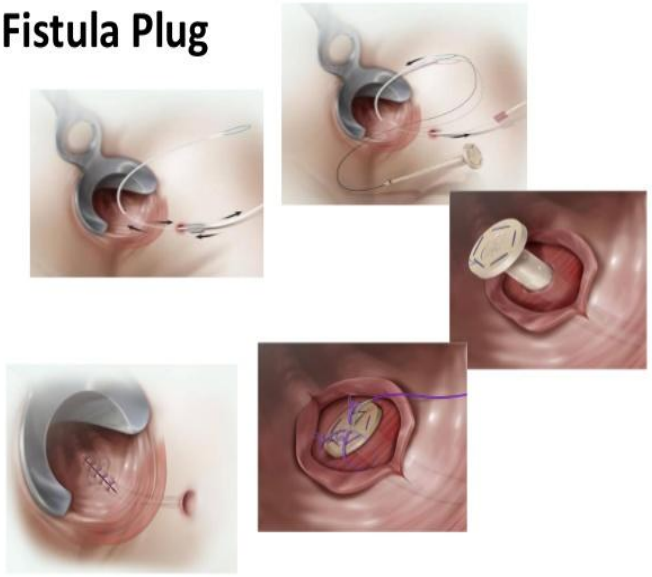
- The seton is passed around the deep portion of the External sphincter. This is left loose to drain the Intersphincteric space and to promote fibrosis.
- After the wound is healed, the seton is removed without dividing the remaining encircled Deep External sphincter.
- Success rates are 60-78%.

MUCOSAL ADVANCEMENT FLAP

It is used specifically in chronic high fistula. It is a one stage procedure with no additional sphincter damage. However there is poor success in case of Crohn's disease or acute infection. Raise a rectal mucomuscular flap. Close the internal muscle defect with an absorbable suture and sew the flap over the internal opening so that the muscular repair is not overlapped by the suture line.[34,35]

PLUGS AND ADHESIVES

- Biotechnological advancements have led to the developments of new tissue adhesives and Fistula plugs. They offer reduced postoperative morbidity and risk of incontinence.[36,37]
- Fibrin glue treatment with one year follow up shows 40-80% recurrence rate.
- Acellular dermal matrix, Gore Bio A fistula plug show early success rates in low fistulas.[38,39,40]
- In Fistulizing Anoperitoneal Crohn's disease, the plug is not found superior to seton removal.[41,42]
- Transsphincteric Fistula in ano is repaired by a combined sphincter sparing method of an anal fistula plug and a rectal advancement flap.[43,44,45]



LIFT *PROCEDURE*

Ligation of intersphincteric fistula tract is done for complex Transsphincteric and Intersphincteric fistulas. The internal opening is closed securely and the infected cryptoglandular tissue is removed.[46]

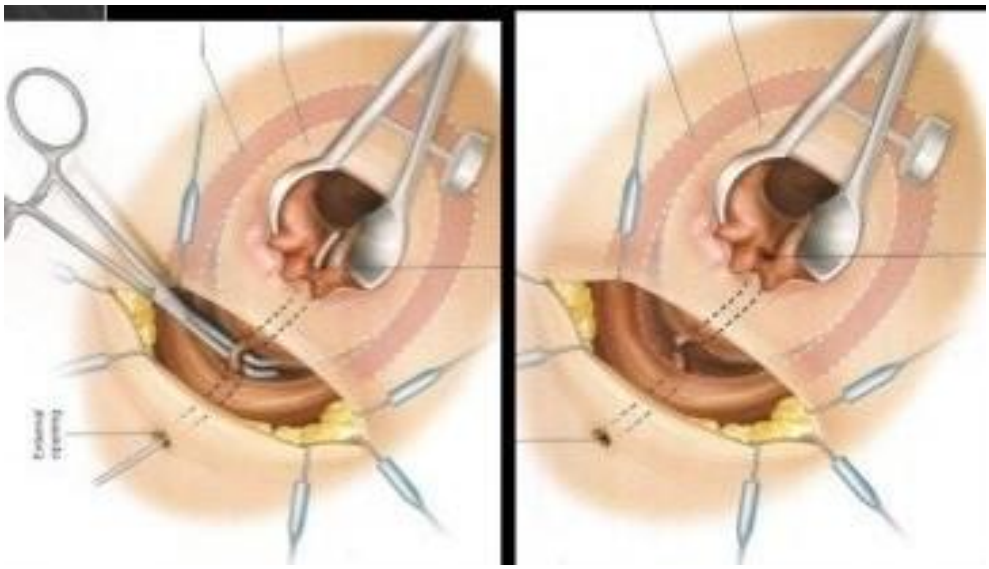
On identifying the Intersphincteric tract, it is hooked with a small right angle clamp and ligated close to the Internal sphincter. The tract is divided distal to the point of ligation. It is confirmed by injecting hydrogen peroxide. The external opening and remnant tract is curetted. Finally the incision is sutured loosely with an absorbable suture. The curetted wound is left open for dressing.[47]

In 2007, Arun Rojanasukal, Thai colorectal surgeon developed this procedure for the first time. The healing percentages in the first report were 94% in 2007.[48,49]

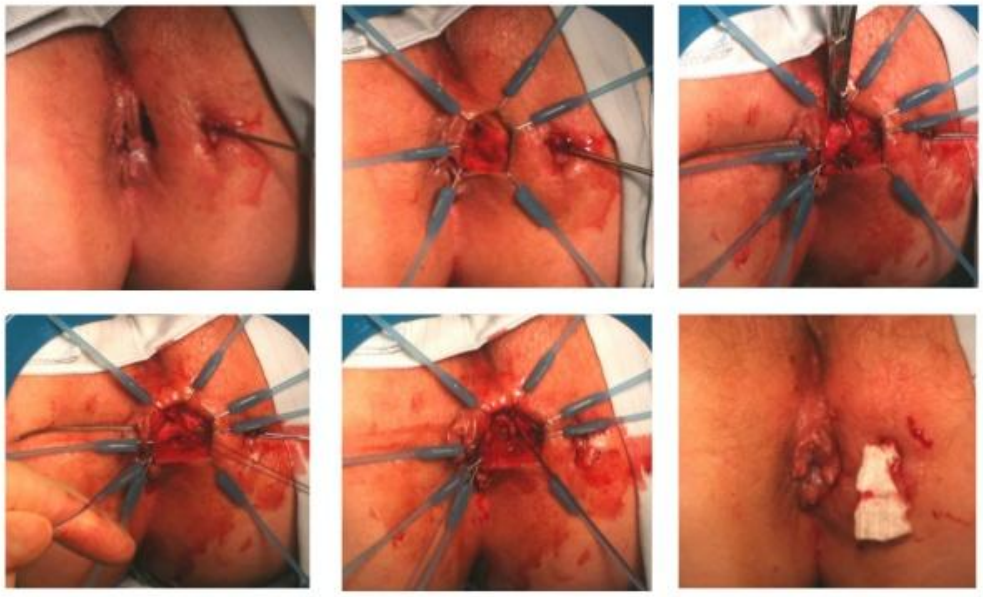
In 1993, Matos et al described a total anal sphincter saving procedure. He described an intersphincteric approach for the fistulous tract and excision of Intersphincteric anal gland infection. The technique is not widely accepted.[50]

LIFT technique causes less trauma to internal sphincter when compared to the other fistula operative procedures.

Recurrence is higher than anorectal advancement flap. However time to return to work is shorter.



LIFT Procedure

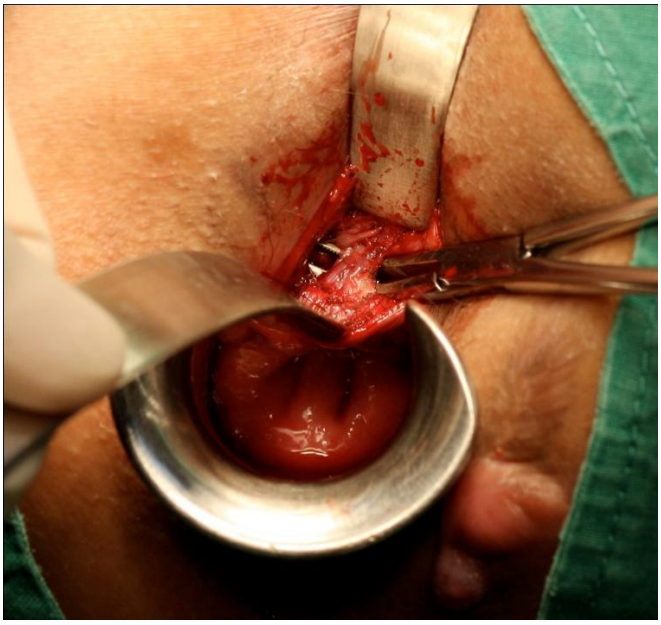


The steps of novel LIFT procedure are as follows

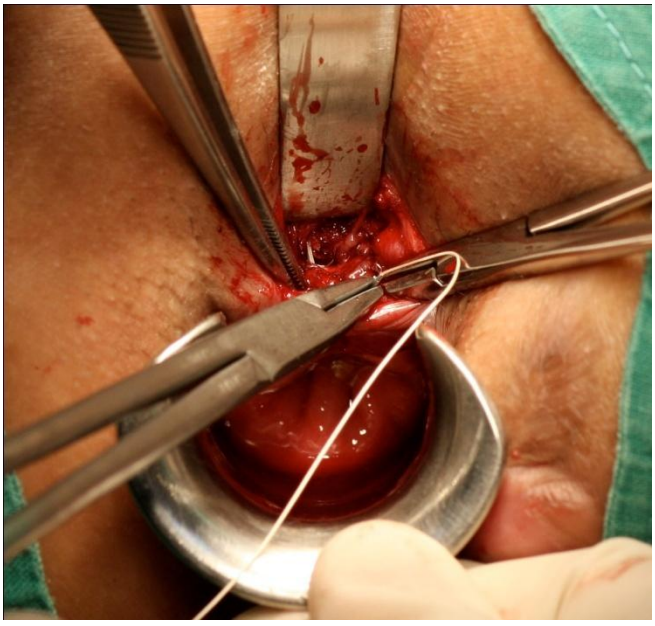
1. Identify the internal opening by injecting dye through the external opening.

2. Make an incision at the Intersphincteric groove and dissect along the Intersphincteric plane using artery forceps until the Intersphincteric fistulous tract is identified.

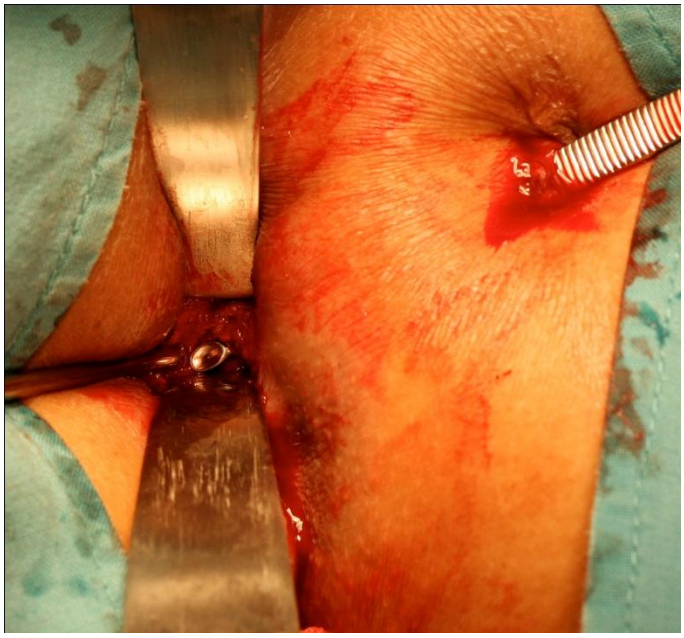
3. Identify the Intersphincteric tract and Hook out the Intersphincteric fistula tract.



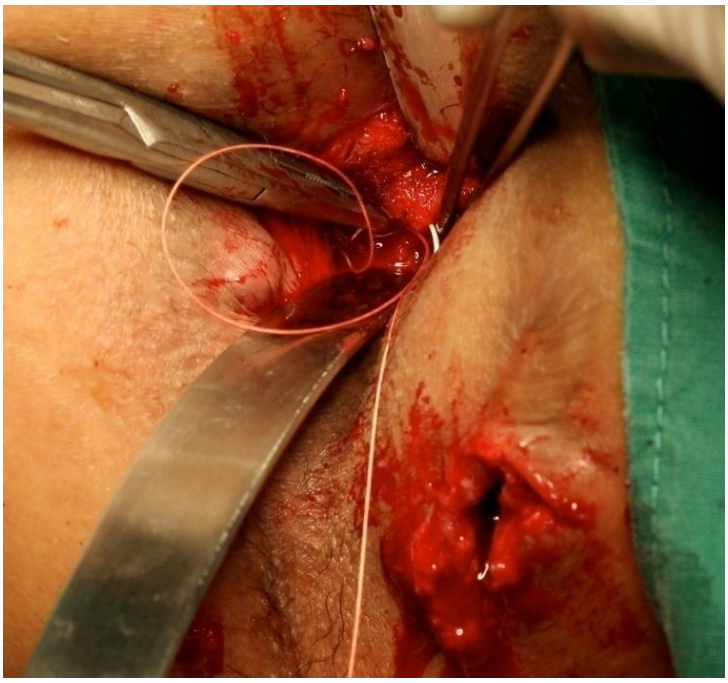
4. Suture ligate the tract using absorbable suture material and the fistula tract is removed.



5. From the external opening curette is passed upto the ligature and curettage is done.



6. External sphincter defect is identified and suture ligated.



7. Intersphincteric wound is closed.

FISTULECTOMY

Fistulectomy is one of the treatment methods to resolve anal fistulas. This procedure offers higher chance of permanent recovery from the disease when compared to drainage seton, fistula plug or fistulotomy. It also helps to completely resolve associated symptoms like chronic diarrhea and incontinence.

Fistulectomy is different from Fistulotomy. Fistulotomy is a procedure used for the treatment of anal fistula in which it involves simply cutting the fistulous tract and the tract is laid open to facilitate healing.

Fistulectomy is a procedure in which the entire fistulous tract is removed completely. Fistulectomy is a more effective procedure than Fistulotomy but it offers a bigger raw area and hence it has a slightly longer recovery period and has some increased risk of complications post operatively.

Fistulectomy is a day care procedure done in hospitals under general or spinal anaesthesia. If no complications occur during or after the procedure, patient can be discharged immediately after the anaesthetic effects have worn off.

Before proceeding to surgery, the surgeon injects a contrast dye through the external opening of the fistula or he uses an imaging film , i.e either an X ray or MRI to make sure of the course of the fistulous tract. In this procedure, Surgeon must remove all the three parts of fistula

1. External opening
2. Internal opening

3. The tract

Make sure of the sphincter muscle integrity as much as possible during the procedure. The procedure takes only around 45 minutes to an hour and patients take about 4-6 weeks to heal completely.

Fistulectomy is an invasive procedure and it involves medium to large incisions in the anal region. Hence it has increased risk of complications post operatively mainly post operative pain and infection.

Other important risks of Fistulectomy include:

- Severe scarring
- Distortion
- Recurrence
- Incontinence.

DIVERSION

Complex persistent Fistula in ano due to Perineal Necrotizing Fasciitis, severe Anorectal Crohn's disease, reoperative Rectovaginal fistulas and radiation induced cases require the creation of fecal diversion.

POST OPERATIVE CARE

- Sitz bath
- Analgesics
- Stool bulking agents
- Close follow up with discharge instructions.

COMPLICATIONS

EARLY:

1. Urinary retention
2. Bleeding
3. Fecal impaction
4. Thrombosed hemorrhoids

LATE:

1. Recurrence
2. Incontinence
3. Anal stenosis
4. Delayed wound healing

LONG TERM MONITORING

- Frequent visits within first few weeks
- Ensure prevention of premature internal wound closure
- Healing occurs within 6 weeks.

MATERIALS AND METHODS

Source (study population)

The patients admitted in Govt. Kilpauk Medical College Hospital including Govt. Royapettah Hospitals, Chennai at Department of General Surgery who are having Fistula in ano.

Study period:

January 2017 to June 2017

Inclusion criteria:

- Patients giving informed consent for the procedure.
- Patients aged more than 18 years of both the genders.
- Patients without any comorbidities.
- Fistula in ano not associated with Inflammatory Bowel Disease, TB and malignancy.
- Patients with grade I and II St. James University Classification

Exclusion criteria

- Denial of consent
- Patients less than 18 years of age

- Patients with comorbid conditions like immune compromised patients, patients on cancer chemotherapy, immunotherapy and on long term steroids.
- Fistula in ano associated with Inflammatory Bowel Disease, TB and malignancy.
- Patients with grade III, IV and V St. James University Classification Fistula in ano.

Sample size:

Totally 100 patients divided into two groups, 50 in group A and 50 in group B admitted from the period of January 2017 to June 2017.

Group A:

Patients undergoing Fistulectomy

Group B:

Patients undergoing LIFT (Ligation of intersphincteric fistula tract).

METHODOLOGY

This study includes 100 patients admitted in the Department of General Surgery, Govt. Kilpauk Medical College Hospitals including the Govt. Royapettah Hospital during the period of January 2017 to June 2017 with Fistula in ano. The patients admitted with Fistula in ano who satisfy the inclusion criteria are selected for the study. Out of these 100 patients, 50 were randomized as group A , who had undergone Fistulectomy as treatment and remaining 50 were randomized as group B, who had undergone LIFT (Ligation of Intersphincteric Fistula Tract) as treatment of Fistula in ano.

- In all cases, bowel preparation in the form of enema was given on the prior day of surgery.
- In the group A, Fistula in ano was treated with Fistulectomy .
- In the group B, Fistula in ano was treated with LIFT(Ligation of Intersphincteric Fistula Tract).
- The patients were followed up for 6 months directly. Patients who did not turn up for follow up were asked to notify the development of any wound complication through postal correspondence.
- Preoperatively all patients received Inj. Ceftriaxone 1 gm i.v stat.
- Postoperatively all patients received

  Inj. Ceftriaxone 1 gm i.v bd and Inj. Metronidazole 500 mg i.v tds for 3 days , as antibiotics.

  All patient received analgesics.

- All patients were operated under spinal anaesthesia.
- During the operation, a record was kept regarding the time required for the surgery.
- Post operatively patients were asked to answer the questionnaire and patients were also observed for immediate post operative complications like post operative wound infection and bleeding per Rectum and late post operative complications like Anal incontinence and recurrence.
- Follow up of patients was done at 1,3 and 6 months and patients are asked to fill the questionnaire in each follow up.
- Data of each patient was collected as per the proforma.
- Data analysis and the benefits in the treatment of Fistula in ano between Fistulectomy and LIFT was compared based on

1. Duration of procedure
2. Post operative Wound healing time
3. Post operative wound infection rate
4. Short term incontinence.

OBSERVATION AND DATA ANALYSIS

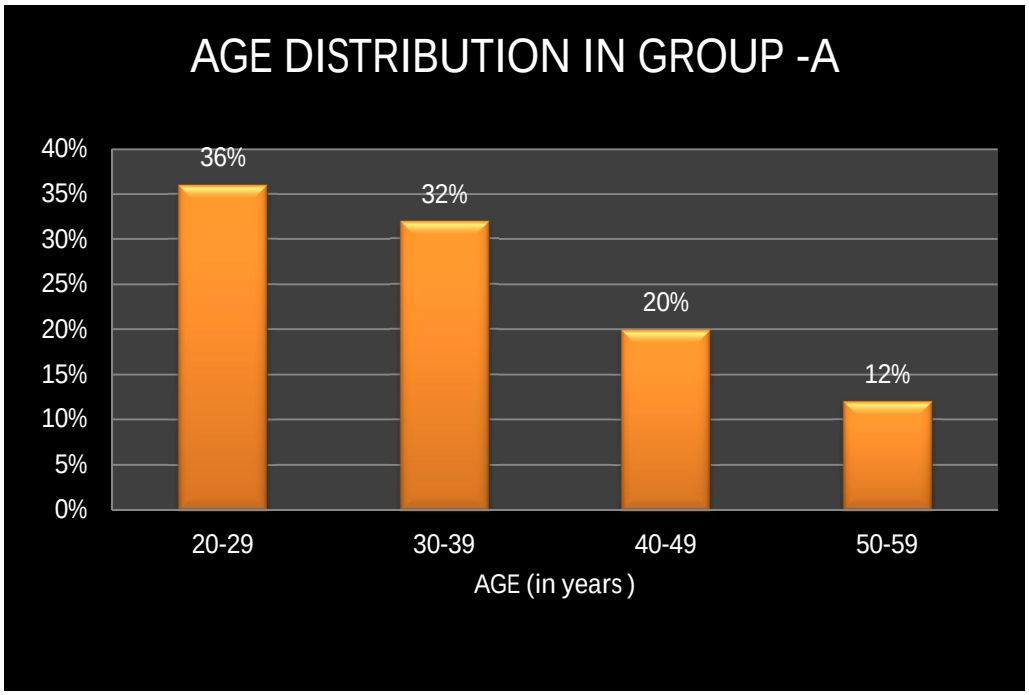
COMPARISON OF RESULTS

RESULT ANALYSIS

TABLE 1: AGE DISTRIBUTION IN GROUP – A

S.NO	AGE DISTRIBUTION (in years)	NO. OF SUBJECTS	PERCENTAGE
1.	20-29	18	36%
2.	30-39	16	32%
3.	40-49	10	20%
4.	50-59	6	12%
	TOTAL	**50**	**100%**

In our study, group A consist of 50 patients who underwent Fistulectomy. About 68 % includes age group between 20 to 40 as given in the above table.

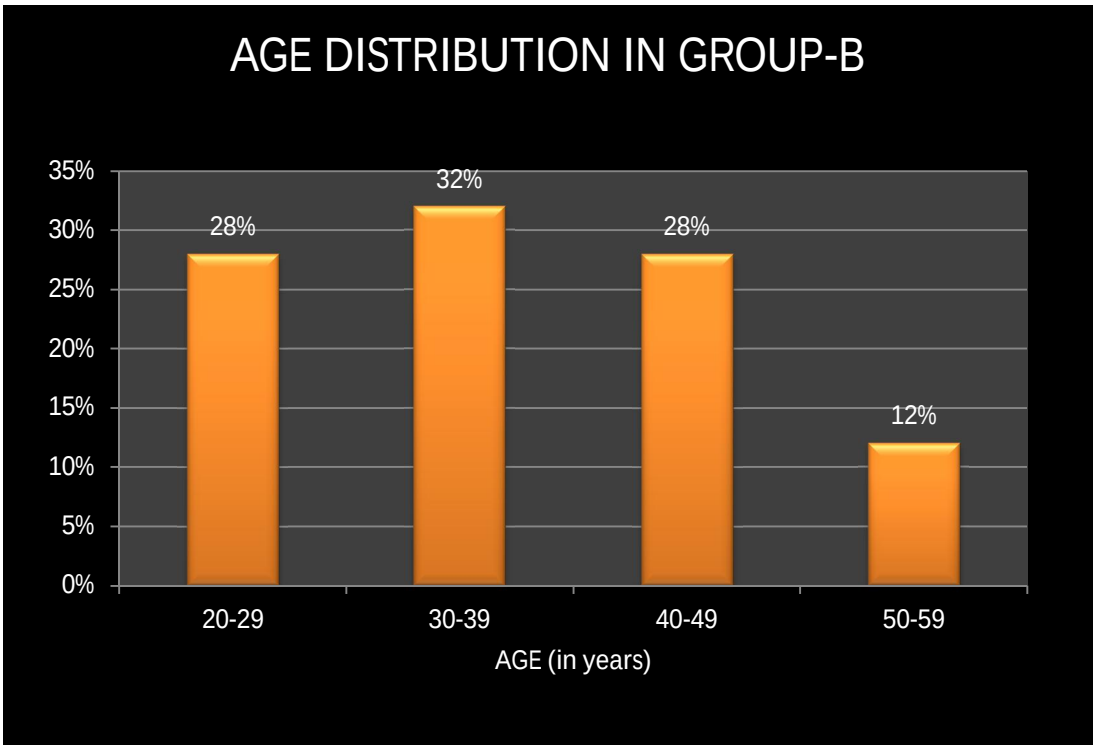


The above graph shows the age distribution in group A patients who have undergone Fistulectomy.

TABLE 2: AGE DISTRIBUTION IN GROUP- B

S.NO	AGE DISTRIBUTION (in years)	NO.OF SUBJECTS	PERCENTAGE
1.	20-29	14	28%
2.	30-39	16	32%
3.	40-49	14	28%
4.	50-59	6	12%
	TOTAL	**50**	**100%**

In our study, group B consist of 50 patients who underwent LIFT(Ligation of Intersphincteric Fistula Tract). 32% includes age group from 30-39 and 28% of fistulas is distributed in both 20-29 group and 40-49 group as on the above table.



The above graph shows the age distribution of subjects in group B who undergone LIFT (Ligation of Intersphincteric Fistula Tract) procedure.

TABLE 3: GENDER DISTRIBUTION IN GROUP- A

S.NO	GENDER	NO. OF SUBJECTS	PERCENTAGE
1.	Male	28	56%
2.	Female	22	44%

In our study, group A consists of about 56% males and 44% females.

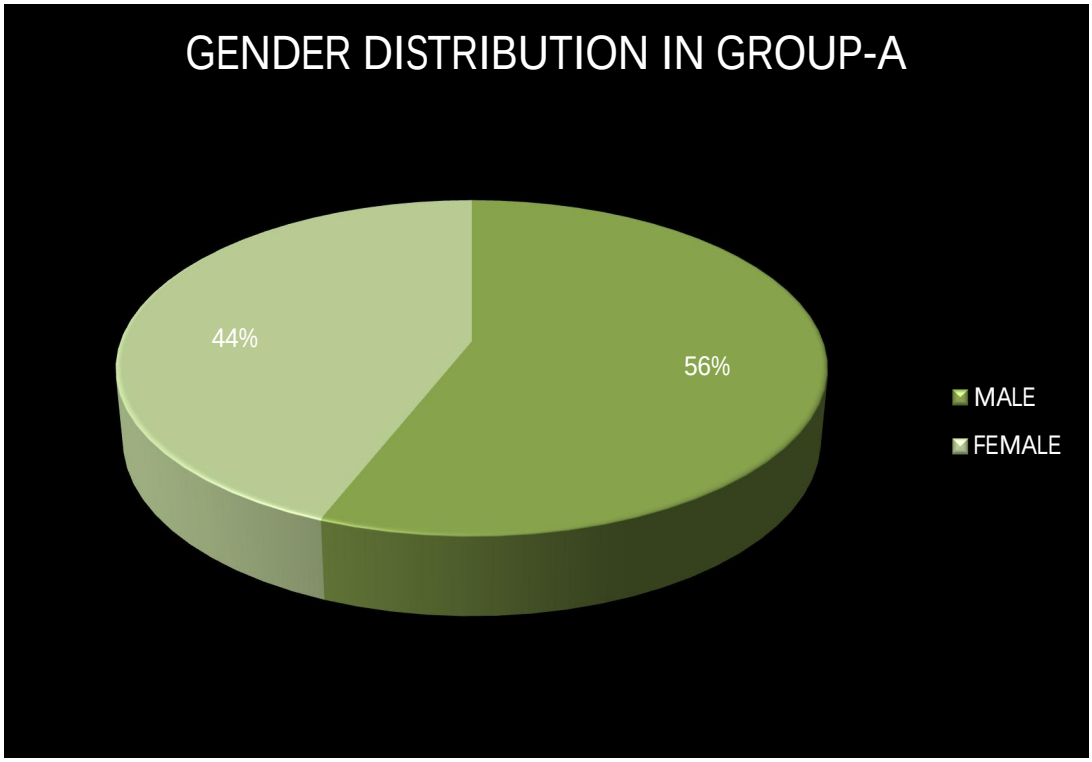

GENDER DISTRIBUTION IN GROUP-A
44%
56%
MALE
FEMALE

TABLE 4: GENDER DISTRIBUTION IN GROUP-B

S.No	GENDER	NO .OF SUBJECTS	PERCENTAGE
1.	Male	25	50%
2.	Female	25	50%

In our study, group B consists of 50% males and 50% females.

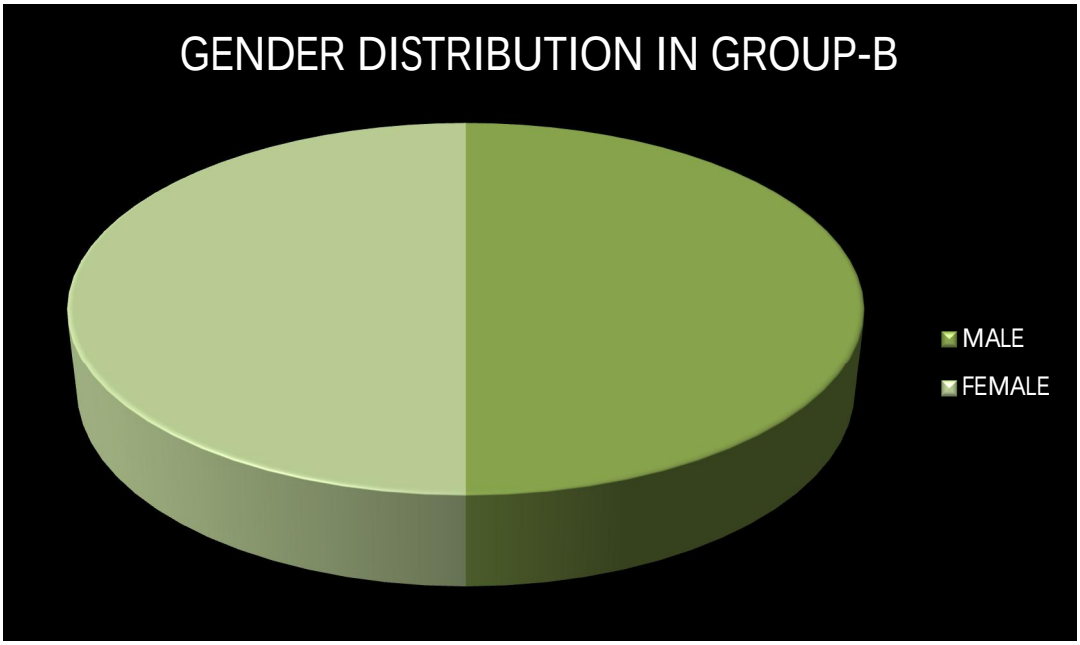

GENDER DISTRIBUTION IN GROUP-B
MALE
FEMALE

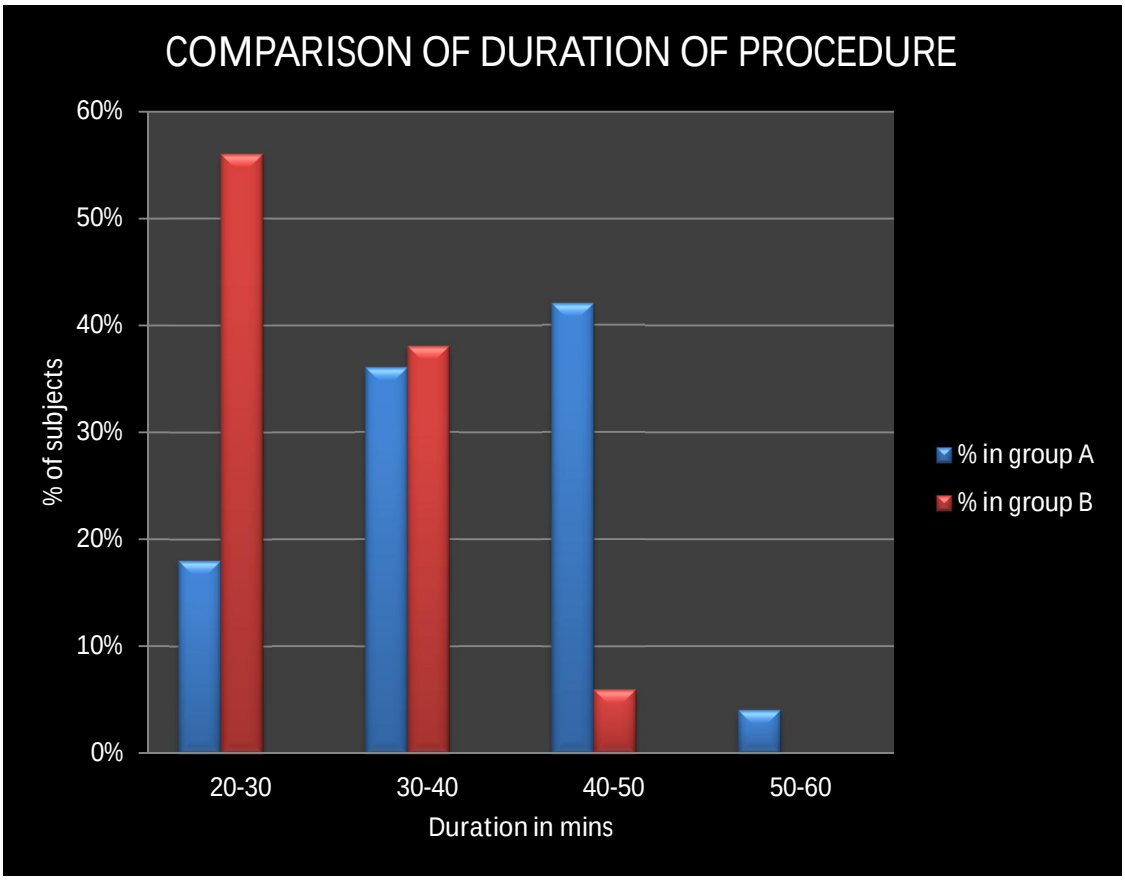
TABLE 5: COMPARISON OF DURATION OF PROCEDURE IN GROUP A & GROUP B

S.NO	DURATION OF PROCEDURE (in minutes)	GROUP A		GROUP B	
		NO. OF SUBJECTS	%	NO. OF SUBJECTS	%
1.	20-30	9	18%	28	56%
2.	30-40	18	36%	19	38%
3.	40-50	21	42%	3	6%
4.	50-60	2	4%	0	0%

In our study , among group A patients who undergone Fistulectomy the average duration of procedure is around 40 minutes.

In our study, among group B patients who undergone LIFT procedure the average duration of procedure is around 30 minutes.

Hence, the duration of procedure is shorter in LIFT when compared to Fistulectomy.



The above graph shows the comparison of duration of procedure between group A who have undergone Fistulectomy and group B who have undergone LIFT.

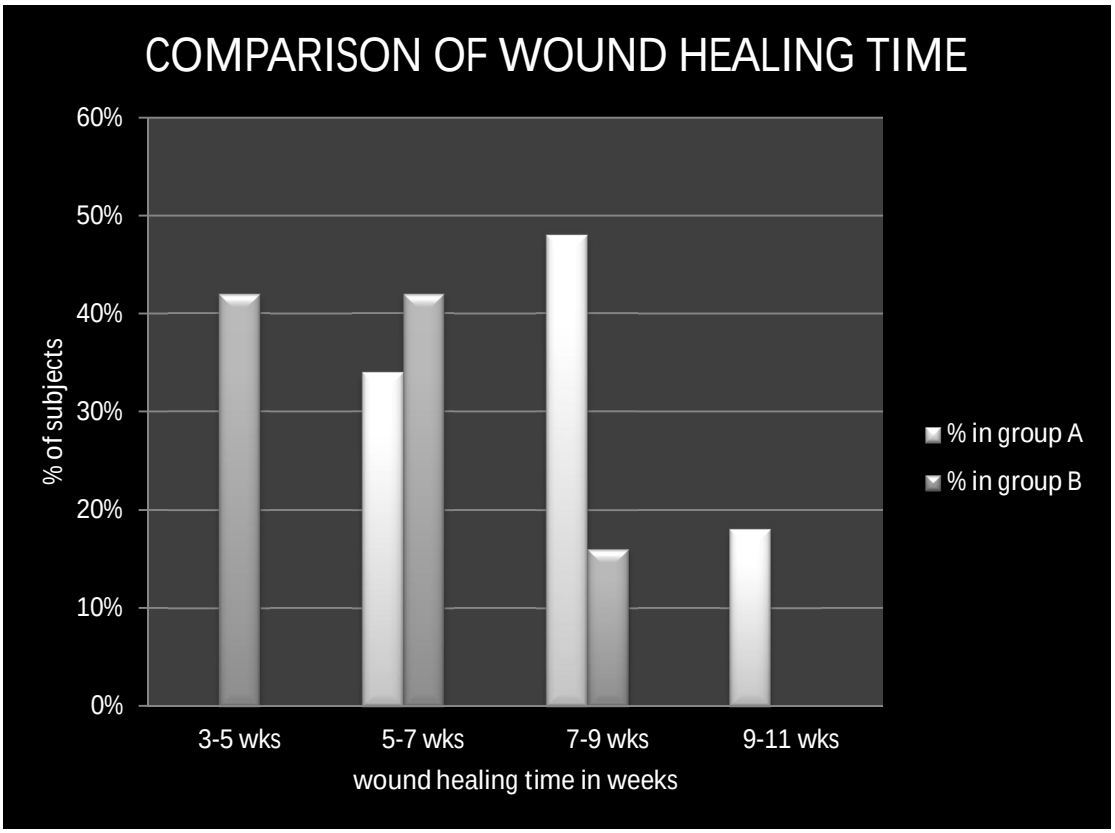
TABLE 6: COMPARISON OF POST OPERATIVE WOUND HEALING TIME IN GROUP A & GROUP B

S.NO	WOUND HEALING TIME (in weeks)	GROUP A		GROUP B	
		NO. OF SUBJECTS	%	NO. OF SUBJECTS	%
1.	3-5	0	0%	21	42%
2.	5-7	17	34%	21	42%
3.	7-9	24	48%	8	16%
4.	9-11	9	18%	0	0%

In our study, among group A the average post operative wound healing time is around 7 weeks.

In our study among group B the average post operative wound healing time is around 5 weeks.

Hence, post operative wound healing time is shorter in LIFT procedure than Fistulectomy and hence hospital stay is less among LIFT procedure patients when compared to Fistulectomy.



The above graph shows the comparison of post operative wound healing time among group A who have undergone Fistulectomy and group B who have undergone LIFT procedure.

TABLE 7: COMPARISON OF WOUND INFECTION RATE IN BOTH THE GROUPS:

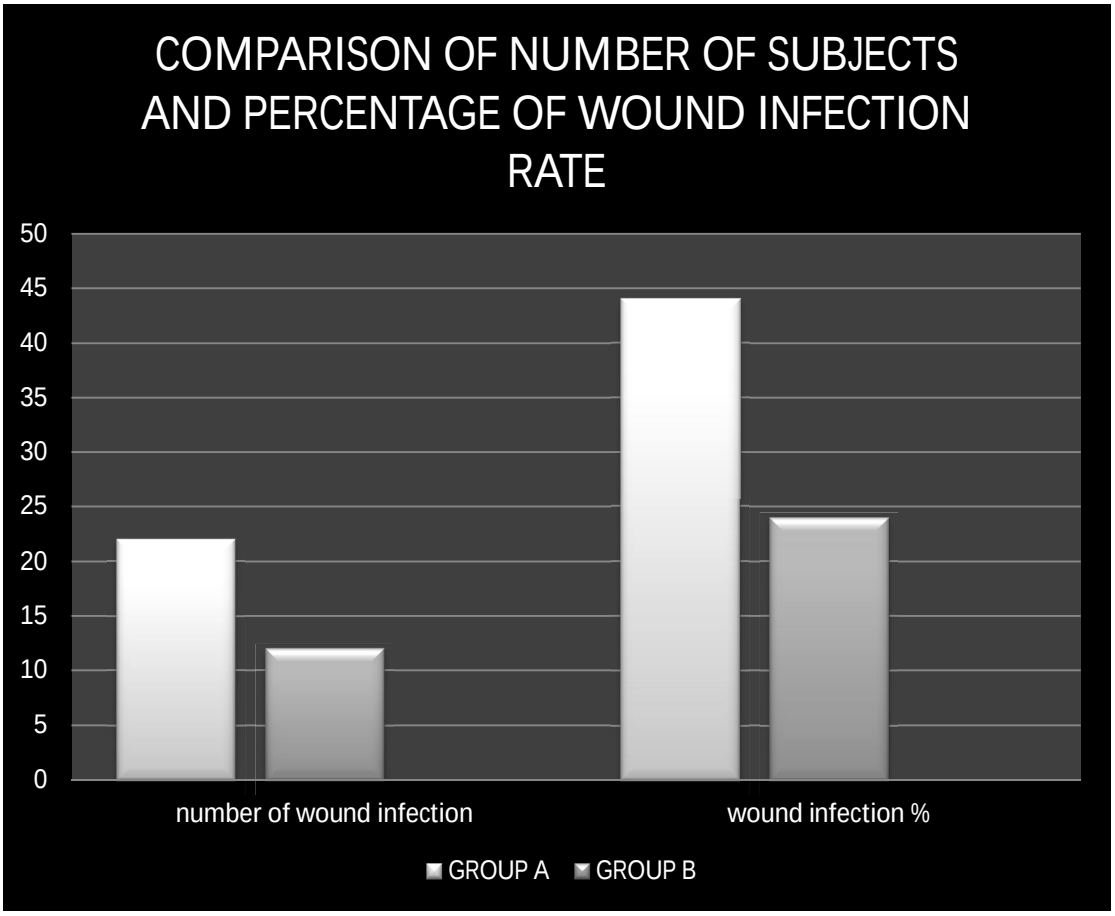
TYPES OF PROCEDURE	WOUND INFECTION RATE				CHI SQUARE VALUE	P VALUE
	yes	%	no	%		
FISTULECTOMY (GROUP A)	22	44%	28	56%	4.4563	0.034772
LIFT (GROUP B)	12	24%	38	76%		

The chi square value is 4.4563

The p value is 0.03477

This analysis shows that the result is significant at p<.05

This comparison shows that post operative wound infection rate is higher in Fistulectomy than LIFT procedure.



DISCUSSION

Total number of patients analysed for this study were 100, among which 50 patients had undergone Fistulectomy and were grouped as group A. The other 50 patients had undergone LIFT (Ligation of Intersphincteric Fistula Tract) and were grouped as group B.

- In this study, in group A, 50 patients underwent Fistulectomy as the treatment for the Fistula in ano and about 88% of the patients were above 20 and below 50 years of age. In group B, 50 patients underwent LIFT as the treatment for the Fistula in ano, similarly as in group A about 88% were included within 20-50 years of age. Hence summing up both the groups, the incidence of Perianal fistula is more between the age group of 20 and 50 years of age.
- In this study, in group A, out of the 50 patients who underwent Fistulectomy as the treatment of Fistula in ano, about 56% were males and remaining 44% females. Similarly in group B, out of the 50 patients who underwent LIFT as the treatment, about 50% were males and remaining 50% were females. Hence summing up both the groups and on analyzing the results, the incidence of Perianal fistula is equal in both the genders.

- In this study, in group A, of the 50 patients who underwent Fistulectomy, preoperative record showed that duration of procedure for Fistulecomy of around 78% falls between 30-50 minutes. Hence the average duration of procedure for performing Fistulectomy is around 40 minutes. Similarly preoperative record showed that duration of procedure for LIFT, around 94% falls between 20-40 minutes. Hence the average duration of procedure for performing LIFT is around 30 minutess. On summing up both the groups the duration of procedure for performing LIFT procedure is shorter when compared to Fistulectomy.

- In our study, in post operative follow up period, post operative healing time is measured in weeks in group A and B. In group A, who underwent fistulectomy, 82% falls between 5-9 weeks. Hence the average post operative healing time for Fistulectomy is 7 weeks. Similarly, in group B, who underwent LIFT, 84% falls between 3-7 weeks. Hence the average post operative healing time for LIFT procedure is 5 weeks. On summing up both the groups, the average post operative healing time is less for LIFT procedure than Fistulectomy because of the smaller incision and smaller raw area

in case of LIFT. Hence post operative hospital stay is also less for patients who have undergone LIFT procedure when compared to Fistulectomy.

- In our study, post operative wound infection rate is compared among group A and group B patients. In group A, who underwent Fistulectomy, 22 patients got wound infection among the 50 patients because of the increased time of procedure, large incision, more manipulation and bigger raw area exposure post operatively. In group B, who underwent LIFT procedure, only 12 patients acquired wound infection. On comparison and analysis of the two groups, wound infection rate in Fistulectomy is more when compared to LIFT procedure and chi square value is 4.4563 and p value is 0.034772 which is less than 0.05. Hence the study is significant and shows that LIFT procedure produces lesser wound infection rate when compared to Fistulectomy in the treatment of fistula in ano.

- In our study, on comparing post operative short term incontinence in group A and group B, among group A patients who underwent Fistulectomy, only 2 out of 50 patients had the complication of incontinence and among group B who underwent LIFT procedure no patients reported with incontinence. Hence it shows LIFT produces lesser incontinence when compared to Fistulectomy.

- **Rojanasakul et al**., from Thailand in 2009 developed the LIFT technique saving the anal sphincter with the success rate of 94.4%. The advantage of LIFT technique are anal sphincter saving, minimal tissue injury hence a shorter healing time and small scar.

- **Shanwani et al**., from Malaysia studied LIFT procedure with the success rate of 82% and considered it as a safe and easy procedure to perform with good outcomes.

- **Alapach et al**., in Thai Journal of Surgery have done a "**Comparative Study on LIFT and Conventional Fistulotomy in the Treatment of Fistula in ano at Hai Yai hospital**" concluded that LIFT is successful with shorter healing time and lower incidence of post operative anal incontinence.

- "**Comparison of LIFT and Fistulotomy in Treatment of Intersphincteric and Low Transsphincteric Anal Fistula- A Prospective Randomized Study**" done in June 2015, a conference paper in diseases of Colon and Rectum studied in 30 patients and concluded that LIFT and Fistulotomy have similar success rates but wound healing time is significantly shorter in LIFT and Fistulotomy has an additional increase in the incidence of anal incontinence compared to LIFT.

- In IOSR Journal of Dental and Medical Sciences, "**A Comparative Study on Various Techniques in Management of Fistula in ano**" done by Department of General Surgery in Govt. Mohan Kumaramangalam Medical College, Salem and concluded that LIFT procedure has least or literally no intraoperative or postoperative complications with very short hospital stay , no risk of anal incontinence or stricture and no risk of recurrence.

- In WJGS (World Journal of Gastrointestinal Surgery), General Surgery Department from Bangkok Hospital had done "**A Study on LIFT and its Modification in the Treatment of Fistula in ano**" and concluded that LIFT is a good procedure for maintaining continence.

- **Sileri.D., Franceschilli.L., Angelucci.G.P. et al.,** in 2011 Techcoloproctol had done a prospective observational study on "**LIFT to Treat Anal fistula- Early results**" and suggested that this novel sphincter saving procedure is effective and safe in treating anal fistulas.
- **Hong.K.D., Kalsarkar.S. et al.,** in 2014 Techcoloproctol had done a Metanalysis and Systematic review on "**LIFT to Treat Anal fistulas**" and showed that LIFT appears to be an effective and safe treatment for Transsphincteric and Complex anal fistulas.

CONCLUSION

General surgeons perform surgeries for Fistula in ano day in and day out as elective procedures. Fistula in ano is more common nowadays because of improper hygiene.

3 major basic aims of Fistula in ano surgeries are

1. Control of sepsis
2. Closure of fistula
3. Maintanence of continence.

Nowadays, operations for Fistula in ano are classified as sphincter sacrificing and sphincter sparing surgeries. Sphincter sacrificing surgeries includes Fistulotomy and Fistulectomy. Sphincter sparing surgeries includes Anal fistula plug, Anal advancement flap, Seton usage and LIFT (Ligation of Intersphincteric Fistula Tract).

In our hospital set up Fistula in ano is mostly treated with Fistulectomy which is a standard procedure. Post operatively many patients had delayed healing time and increased hospital stay due to large wound and some patients developed postoperative anal incontinence due to sphincter injury which affects patients' day to day activities.

The present study compared the utility and effectiveness of two standard procedures LIFT (Ligation of Intersphincteric Fistula Tract) and Fistulectomy in

terms of duration of procedure, wound healing time , duration of hospital stay, wound infection rate and short term incontinence.

This study proves that the LIFT procedure gives better outcomes when compared to Fistulectomy in the treatment of Perianal fistula. LIFT is a less time consuming procedure than the Fistulectomy, so there is also decreased complication due to prolonged anaesthesia. Post operative surgical site wound infection rate is of less percentage in LIFT when compared to Fistulectomy.

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MASTER CHART

Name	Age	Sex	OP NO.	Procedure type	Duration of procedure in mins	wound healing time in weeks	wound infection	short term incontinence
srinivasan	45	M	4526	F	35	7	0	0
Vinoth	38	M	6953	F	25	9	0	0
Rani	30	F	3625	F	40	10	1	0
saravanan	28	M	9654	F	45	6	0	0
periyasamy	34	M	3256	F	55	9	1	0
Amritha	26	F	4852	F	35	10	1	0
Rajesh	54	M	1563	F	25	7	0	0
Dinesh	27	M	5489	F	30	9	1	0
Rajkumar	24	M	6659	F	35	6	0	0
Iyappan	43	M	3254	F	45	8	0	0
Shanthi	42	F	2596	F	45	9	1	0
shenbagavalli	48	F	1254	F	40	10	1	0
pachaiyammal	56	F	3300	F	45	7	0	0
kaja moideen	34	M	5962	F	40	9	1	0
unnamalai	36	F	3620	F	45	10	1	0
kamatchi	32	F	1520	F	35	11	1	0
krishnaveni	27	F	1852	F	40	7	0	0
thanikachalam	41	M	3620	F	25	8	1	0
Rajesh	21	M	9874	F	25	6	0	0
Selvaraj	27	M	6523	F	30	8	1	0
pushpalatha	29	F	2214	F	30	7	0	0
Vijaya	31	F	5698	F	35	7	0	0
Shalini	24	F	3699	F	45	9	1	0
kathavarayan	45	M	2588	F	50	9	1	0
chakrabani	34	M	8523	F	35	10	1	0
Papitha	32	F	8520	F	35	8	0	0
narayanan	28	M	7410	F	45	8	0	0
Yasar	22	M	1596	F	40	7	0	0
Babu	35	M	3524	F	45	7	0	0
gunasekar	41	M	1856	F	45	9	1	0
Ramesh	49	M	6851	F	45	8	0	0
Michael	22	M	3206	F	50	7	0	0
nagappan	53	M	9996	F	45	7	0	1
Ajay	24	M	3326	F	35	8	0	0
Kalyani	36	F	5586	F	35	10	1	0
paneerselvam	50	M	4448	F	30	8	0	0
manjunathan	35	M	3693	F	45	11	1	0

janarthanan	34	M	2583	F	50	9	0	0
Nagaraj	40	M	8888	F	55	9	1	0
Raghavi	28	F	9653	F	45	7	0	0
Sulthana	32	F	3256	F	40	8	1	0
Kamini	22	F	4458	F	45	7	0	0
Mala	23	F	9994	F	50	9	1	0
rajeshwari	29	F	5912	F	45	7	0	0
mariyammal	45	F	5000	F	40	9	1	0
Govindan	31	M	6748	F	35	8	0	0
Durairaj	25	M	6895	F	30	7	0	0
Malliga	50	F	3562	F	40	8	0	0
lokeshwari	34	F	9563	F	45	8	0	0
rathinammal	56	F	3201	F	45	10	1	1

F - FISTULECTOMY

0 – No

1 – Yes

Name	age	sex	op number	procedure type	duration of procedure in mins	wound healing time in weeks	wound infection	short term incontinence
Gowri	41	F	4859	L	25	4	0	0
Raja	33	M	2630	L	25	5	0	0
Devi	45	F	7529	L	25	5	0	0
Moorthy	41	M	3652	L	30	7	1	0
Ganesan	54	M	5963	L	35	5	0	0
sundaram	35	M	1115	L	40	5	0	0
Sumathi	31	F	2222	L	35	6	0	0
Savitha	26	F	3598	L	25	6	0	0
Chandru	31	M	6359	L	40	8	1	0
sudhakar	35	M	4853	L	30	6	0	0
Nithya	25	F	8639	L	35	6	0	0
kalaiarasan	43	M	5328	L	25	5	0	0
muniyappan	38	M	2614	L	25	4	0	0
Jeevan	29	M	5362	L	45	5	0	0
Sathya	27	F	2954	L	40	8	1	0
Nancy	24	F	5263	L	30	7	0	0
Rani	45	F	2893	L	35	6	0	0
Ravi	43	M	4265	L	25	6	0	0
Joseph	30	M	1220	L	30	8	1	0
meganathan	52	M	9523	L	25	7	0	0
jeyalakshmi	43	F	5863	L	25	7	0	0
sudamani	51	F	2963	L	35	5	0	0
pachaiyappan	46	M	8593	L	30	6	0	0
dharuman	32	M	1453	L	30	8	1	0
nagarajan	32	M	3625	L	35	5	0	0
rajalakshmi	36	F	1563	L	40	4	0	0
Mohan	42	M	4896	L	35	7	1	0
janarthanan	25	M	2631	L	45	4	0	0
Shanthi	29	F	2635	L	40	4	0	0
mahalakshmi	46	M	4896	L	35	8	1	0
Priya	23	F	3214	L	25	7	0	0
Balaji	33	M	2368	L	25	5	0	0
Aayisha	26	F	8216	L	30	7	1	0
poongothai	42	F	1230	L	30	4	0	0
purushothaman	51	M	2928	L	35	6	0	0
Angel	33	F	9876	L	35	7	1	0
Anjali	26	F	2818	L	25	4	0	0
Bharathi	34	F	2237	L	35	4	0	0

yesunathan	42	M	6543	L	30	8	1	0
Arasi	22	F	8976	L	40	6	0	0
Venkat	27	M	2191	L	40	6	0	0
Gowri	39	F	5282	L	45	8	1	0
Fathima	32	F	3661	L	40	5	0	0
Arul	43	M	2020	L	30	6	0	0
Murugan	52	M	7953	L	35	7	1	0
Kanmani	27	F	1221	L	25	5	0	0
Malliga	44	F	3048	L	25	4	0	0
Vasanthi	39	F	8334	L	30	8	0	0
duraisaamy	35	M	7841	L	30	6	0	0
Jenifer	22	F	9231	L	25	5	0	0

L – LIFT (Ligation of intersphincteric fistula tract)

0 – No

1 – Yes

Data collection form

- Id of the patient: Sex : Date:
- Investigator name: Time:

  Pre-operative data

- Date of birth:
- Smoking history (current smoker (Y or N):
- Medical history (COPD, diabetes, cardiac disease, TB):
- Preoperative Radiotherapy or chemotherapy:
- Preoperative long term corticosteroids:
- Previous perianal surgeries:
- Previous history of inflammatory bowel disease or lower GI malignancy:
- Grading of fistula in ano :

Intra op details

- Type of operation:
- Type of anaesthesia:
- Length of incision:
- Blood loss:
- Operation time duration:
- Antibiotic prophylaxis:
- Suture material:
- Pain medication:

Post-operative data

- Duration of stay in Ward:
- Surgical site infection:
- Bleeding per rectum:
- Fever:
- Wound gaping and discharge:
- Difficulty in passing stools or anal incontinence:
- Pain scoring by visual analog score on post op day 1 and 5 and at discharge:
- Post op follow up: during each visit once a week in first post op month and biweekly from second post op month
- Activities of daily living:

Return to occupation: